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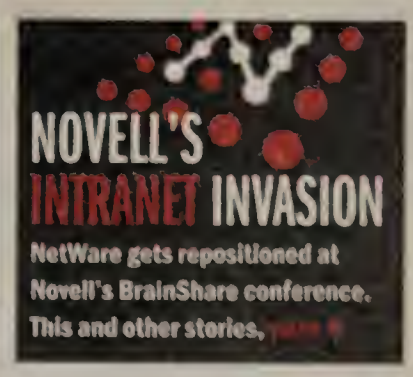
Networkworld

THE NEWSWEEKLY OF ENTERPRISE NETWORK COMPUTING



SNMPv2 means war!

By Jim Duffy
Las Vegas

A few years ago, when it was just called Interop, the show hosted a war pitting SNMP against Common Management over TCP for supremacy as the standard network management protocol.

Next week, NetWorld+Interop 96 will be the battleground in the civil war dividing the authors of SNMPv2.

Vowing to fight until there is only one security framework standing, SNMPv2 coauthors

See SNMP, *page 86*

Get more info on rival SNMP proposals on Network World Fusion, including:

- Detailed specs and papers for SNMPv2*
- Similar info for the rival USEC
- Articles on the breakup of the IETF SNMPv2 working group

Select News+ then Front Page.

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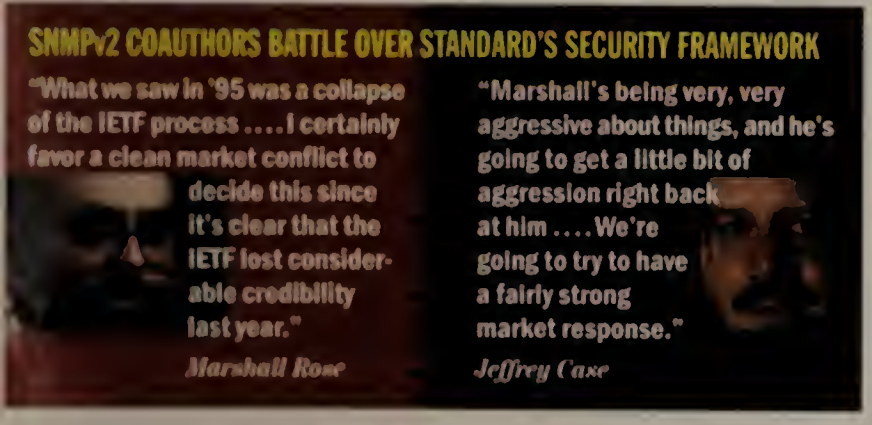

Bay, Cabletron spell relief for VLAN sites

Bay switch module adds routing to virtual LANs.

By Jim Duffy
Santa Clara, Calif.

Bay Networks, Inc. this week will make life easier for companies deploying and interconnecting VLANs using ATM.

The company will unveil an Asynchronous Transfer Mode Virtual Network Routing (VNR) Module for its System 5000 switching hub, enabling companies to use IP routing to link virtual LANs.

"We're going to reach the stage where we want to route be-

See Bay Networks, *page 86*

Cabletron unwraps new management software.

By Jodi Cohen
Las Vegas

Cabletron Systems, Inc. next week will unveil a pair of tools designed to help its switch customers set up and manage virtual LANs.

The SecureFast software represents the third and final component necessary for network managers to take advantage of Cabletron's ballyhooed SecureFast Virtual Networking architecture. The tools will work in conjunction with existing Cable-

See Cabletron, *page 86*

VLAN VARIETY

Cabletron will offer two new Unix-based virtual LAN management applications under its SecureFast Virtual Networking scheme:

- **Virtual LAN Manager**
  A basic tool for LAN switching customers that lets them set up VLANs, control routing and set simple policies.
- **Virtual Network Manager**
  A tool for larger customers that provides more sophisticated management features, including accounting functions and improved security policies.

Compaq eyes expanded enterprise network role

Will bolster Insight Manager, 'Net servers and SmartStart.

By Ben Heskett
Houston

PC and server big shot Compaq Computer Corp. has fixed itself a full plate of network product plans that should last through the end of the year.

The company will tune its Insight Manager for the enterprise, introduce a new line of routers, distribute applications over the World-Wide Web and broaden the appeal of its SmartStart server software installation technology.

Compaq's *Gary Stimac says the company will add the ability to use Insight Manager remotely*

The product feast — which starts at NetWorld+Interop 96 next week and was discussed in briefings with *Network World* last week — includes:

■ The integration of Insight Manager, the man-

See Compaq, *page 87*

Long-distance tariffs face FCC ax

By David Rohde
Washington, D.C.

In a move of stunning breadth, the Federal Communications Commission last week proposed to end 62 years of rate regulation by wiping out tariffs for the entire long-distance industry.

The proposal would, for the first time, free up carriers and users to negotiate at will the rates and terms for network services.

The FCC also proposed to eliminate its longstanding rule prohibiting long-distance carriers from bundling their services with vendors' network equipment on a single user contract.

By ending the so-called unbundling rule — a kissing cousin to tariff regulation — the FCC would wipe out a roadblock that has bedeviled carriers looking to design complete user networks (*NW*, Feb. 6, 1995, page 1). It also would give carriers more flexibility in signing contracts for managed WAN offerings, and boost their burgeoning efforts in systems integration down to LANs and the desktop.

Analysts were overjoyed at the news. "I can't tell you the number of times I've heard [carriers] say in negotiations, 'We can't do this because of the tariff,' " said Jim Blaszak, an attorney here representing large corporate users.

Read my lips: No new tariffs

If enacted, the proposal would reverse the commission's recent requirement for frame relay tariffs and end any pressure to tariff cell relay services such as Asynchronous Transfer Mode.

"That makes me so happy," said Christine Heckart, senior broadband analyst at TeleChoice, Inc., a market research firm in Verona, N.J.

See Tariffs, *page 87*

You got a problem?

Our 1996 Network Service and Support Survey found that most network managers have plenty, with high prices and poor responsiveness topping the list. More on page 88.

A ranking of the biggest problems with network service and support vendors (based on a survey of 287 customers):

Problem	'96 ranking	'95 ranking
High cost of service	1	1*
Poor responsiveness	2	2
Lack of multivendor expertise	3	1*
Lack of qualified staff	4	3
Lack of thoroughness	5	5
Poor documentation	5	4

*Tie

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Access Network World Fusion using the number in yellow. See page 5 for details.

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This Week

News+

- We've beefed up our daily news feed with coverage from the IDG News Service's global team of reporters. Now find more daily networking news than ever before.
- Download our tips for sessions you shouldn't miss, then check out the real Las Vegas in our exclusive Complete Outsider's Inside Guide to Las Vegas – we promise no boring guides to casinos.

The Front Page:

- **Virtual LANs:** Read articles on the pitfalls early adopters of this technology have faced – and tips on making your own migration easier.
- **Telecommunications reform:** The FCC recently issued proposed regulations for letting phone companies into the cable business. Download the draft rules.
- **Network management:** Recent months have seen Compaq snap up networking vendors. Read articles on its plans for moving into the internetworking market.

The Technical Sections:

- **Electronic commerce:** Take a look at efforts by government agencies to embrace financial EDI, in Electronic Commerce.
- **Groupware:** Do you need collaborative networking software? Download a paper that can help you decide, in Client/Server Applications.

Forum

- Our debate on the Communications Decency Act continues. How will it change your job?

this week's pick

Need security information fast? A good place to start is the National Institute of Standards and Technology's Computer Security Resource Clearinghouse at http://csrc.ncsl.nist.gov/. You'll find bulletins on new network security holes and patches, conference information and searchable databases of virus and computer-risks mailing lists.

HOW TO GET ON TO NETWORK WORLD FUSION

At the welcome screen, click on First Visit and follow the instructions. Subscribers, keep your NWF number – highlighted on the front cover's mailing label – handy during registration. Non-subscribers must fill out an on-line registration form.

NetworkWorld Fusion

CONFERENCE PICK

HOT TOPIC

Anura Gurugé is the latest *Network World* columnist to go interactive. Read his column, then tell him what you think.

Select Forum, Columnists then Gurugé.

NetworkWorld

An IDG Publication

Contents

3Com *CEO Eric Benhamou looks into his company's future. Page 31.*

News

6 **Fore prefers** 2.4G bit/sec ATM, saying 622M bit/sec is too slow.

10 **President Clinton wants** to give 888 vanity numbers to the highest bidders.

10 **It feels like deja vu** as AT&T commits to public Notes net, again.

14 **IBM/Tivoli plan** for their future in distributed management.

16 **Platinum to take** wraps off four new database tools.

16 **Sybase to add** support for SMTP to remote database.

87 **BBN Planet gives** the world a Web hosting option.

87 **TIS hopes users** will "Trust" its intranet firewalls.

WANs & Internetworking

19 **FCC upsets apple cart** with hint of universal ATM, ISDN access.

19 **GE gives** its call center agents rich array of data.

19 **StonyBrook, ImageNet** hope to dazzle Interop crowd with net management.

25 **Traffic jams have** some ISPs cutting off customers.

26 **Microsoft sets up** Web site to help customers order ISDN.

Local Networks

31 **Madge rolls out** ATM backbone gear.

31 **New tools make NetWare** management and application development easier.

32 **Printing company swaps in** Fast Ethernet for token ring.

SPECIAL FOCUS

Beyond LAN management

New tools are cross-platform and enterprise-savvy. See page 39.

Client/Server Applications

41 **Notes isn't the** only groupware game in town.

41 **Printer books** Java for publishing project.

44 **SAP and Baan** Internet-enable their software.

44 **Fulcrum readies** info search tools for the Web and Microsoft Exchange.

Electronic Commerce

51 **Three things are** now certain: death, taxes and filing electronically.

51 **Apertus puts Web face** on IBM apps.

52 **Third parties follow** Microsoft into Internet battle.

Technology Update

55 **Choosing the right** technology for your multimedia applications could save you a great deal of money.

FEATURES

Buyer's Guide:
Web server market springs to life. Page 61.

Review:
TEST ALLIANCE A closer look at 3com's ONcore hub. Page 65.

Analysis:
Is CiscoBlue for you? Page 68.

Management Strategies

71 **How to fill** the Windows NT knowledge gap.

Opinions

20 **Daniel Briere and Christine Heckart** predict the end is near for calling cards.

34 **Dave Kearns** claims the integration of Java into NOSes is a big deal.

36 **Skip MacAskill and Melinda Le Baron** say net management deserves more respect.

42 **Marc Myers** explains the right and wrong ways to keep Internet-based applications safe.

58 **Editorial:** Novell returns to its roots.

58 **Anura Gurugé** believes CiscoBlue sets the standard for IBM's networking future.

59 **Thomas Nolle** thinks ATM integrated access appeal may weaken with increased CPE costs.

90 **Dave Buerger:** Novell's initiatives require skilled use of lipreading.

90 **Mark Gibbs:** Warning: Computers may prove to be dangerous to your health.

Network Help Desk. *Page 55.*

Message queue. Letters from our readers *Page 59*

Editorial and advertiser indexes. *Page 85*

NetworkWorld's *Mission: To provide news and analysis that help network IS professionals deliver the network computing infrastructure and distributed applications required to meet evolving business needs.*

News briefs, March 25, 1996

Newman in town

A former Novell, Inc. executive who helped build the company's testing lab last week used Novell's BrainShare '96 conference to launch his own venture, which will focus on putting heterogeneous nets and applications to the test.

Jan Newman *moves to KeyLabs.*

Jan Newman, previously executive vice president of Novell's NetWare Systems Group, will head up KeyLabs, Inc., a Provo, Utah, testing firm that will concentrate on Internet and intranet applications, client/server computing and multimedia applications.

IBM gives mobile mart its support

The mobile computing industry last week hit a milestone when several wireless net operators and mobile product makers said they will take advantage of IBM's heralded support and integration services.

IBM struck agreements to provide integration, help desk, marketing and other services to the following companies: ARDIS Co., AT&T Wireless Services, Bell Atlantic NYNEX Mobile, Cellular One, Ericsson GE, GTE Mobilnet, Inc., Racotek, Inc., RAM Mobile Data, Telxon Corp. and 360° Communications Co.

Exchange-to-Notes liaison

Next week at NetWorld+Interop 96, MESA Group, Inc. of Newton, Mass., will showcase software that provides a bridge between Microsoft Corp.'s Exchange Server and Lotus Development Corp.'s Notes. With JumpStart, users will be able to convert information from Notes databases into usable data in Exchange folders. Microsoft is scheduled to launch Exchange Server on April 2.

VLAN standard breakthrough

The IEEE 802.1 committee last week broke the logjam in its virtual LAN standards effort when the group unanimously agreed on a frame-tagging format for making VLANs interoperable. Previously, Cisco Systems, Inc. was blamed for delaying the standards process by insisting that the IEEE endorse the 802.10 Interoperable LAN/MAN Security standard as a means of tagging frames with VLAN identification information (*NW*, Feb. 26, page 1). Now that the committee has rejected Cisco's proposal and agreed on its own approach — which Cisco will support — vendors can start building silicon to support the standard.

NETWORLD INTEROP PREVIEW

OpenDoc is in

The Object Management Group (OMG) last week formally adopted CI Labs, Inc.'s OpenDoc software component technology as its standard for building software objects that can be distributed across networks. OMG's Distributed Document Component Facility, as OpenDoc will be called, will be supported by vendors of operating systems, applications and development tools.

Monitoring the 'Net: the sequel

Willowdale, Ontario-based Sequel Technology LLC next week will unveil a packet-filtering communications server that lets corporations monitor employee use of the Internet, internal Web servers and on-line services such as CompuServe. The product, Sequel Net Access Manager 1.0 for Windows NT, is scheduled to ship by May.

Sun raises 'Net stakes

Seeking to retain a leadership position in the Web server hardware market, Sun Microsystems Computer Co. will announce a 64-bit series of Netra servers this week.

To complement that move, SunSoft, Inc. will announce a Solaris Internet Server software package to counter Microsoft Corp.'s Internet Information Server. And parent company Sun Microsystems, Inc. will announce a wide-ranging series of Internet-related initiatives at a press conference this week in New York (*NW*, March 18, page 12).

Fore to raise ATM speed limit

By Jodi Cohen
Pittsburgh

If you think ATM is already fast enough, Fore Systems, Inc. would beg to differ.

The company last week confirmed that it is working with Northern Telecom, Inc. to develop a 2.4G bit/sec Asynchronous Transfer Mode switch interface, blowing by today's standard 155M and 622M bit/sec ATM interfaces.

Today's switches provide more than enough capacity for most environments, analysts said. But some customers are eager to deploy switches that offer the 2.4G bit/sec ATM interfaces.

"It would simplify the equation if Fore had solutions that were scalable from 622M [bit/sec] and up [for our OC-48 SONET backbone]," said Jeff Marshall, managing director of communications at Bear, Stearns & Company, Inc. in New York. "I would like to start attaching ATM switches to SONET equipment using these high-speed interfaces."

Thomas Nolle, president of the CIMI Corp. consultancy in Voorhees, N.J., said higher speed ATM could give network managers a way around doing the complex job of traffic management on ATM nets.

"ATM traffic management for maintaining high-quality performance is a pain in the neck. If there is no monthly recurring cost of bandwidth — which there wouldn't be in a campus environment — you may as well eliminate the problem by just throwing capacity at it," he said.

But Nolle said he fails to see any significant commercial requirement for 2.4G bit/sec ATM for at least the next 10 years.

Despite having its detractors, Fore is moving full-speed ahead on developing faster ATM gear, initially to satisfy a $5.5 million contract it has with the Department of Defense. The company is building an ATM backbone switch that can support cell streams at rates up to 2.4G bit/sec while simultaneously handling traffic at 155M and 622M bit/sec. To address these accelerated port speeds, Fore's new device boasts a switching capacity in excess of a terabit per second.

WHAT'S THE NEED FOR SPEED?

In a recent survey about ATM requirements, users did not anticipate the need for ATM transport speeds above 622M bit/sec, even in the year 2010, according to CIMI Corp. consultancy in Voorhees, N.J.

"We have customers demanding this today," said Jeff White, product-line manager for ATM switches at Fore. "Within the next year or year and a half, we will see real demands in the commercial market for 622M bit/sec to the desktop and similar demands for 2.4G bit/sec between switches on the backbone."

White explained that when 622M bit/sec interfaces are used for desktop or server links, a bandwidth jump to 2.4G bit/sec will be necessary for trunking.

While Fore is first out of the gate to announce gigabit-plus ATM switch port speeds, competitors 3Com Corp., Compaq Computer Corp. and Sun Microsystems, Inc. are pushing for a new technology to extend Ethernet to 1G bit/sec (*NW*, Dec. 18, 1995, page 1). Like 2.4G bit/sec ATM, gigabit Ethernet would be used to interconnect backbone switches.

The appeal of gigabit Ethernet lies in the fact that most customers are comfortable using Ethernet technology, whereas many are wary of moving into the uncharted waters of ATM, supporters said. ■

CORRECTION

A recent article (March 11, page 1) said IBM would be adding Asynchronous Transfer Mode adapters to its Model 200 and 500 Nways switches; it should have said the Model 300 and 500 devices. In addition, the 155M bit/sec adapter for the 8260 hub is already available.

ABEND

abend *(n)* **1:** abnormal end to a computer process **2:** the on-line fountain of 'Net wit and high-tech humor found on Network World Fusion (www.nwfusion.com).

Things you don't want the systems administrator to say

- Uh-oh....
- That's SOOOOO bizarre.
- What do you mean that wasn't a copy?
- I cleaned up the root partition and now there's LOTS of free space.
- Do you really need your home directory to do any work?
- We prefer not to change the root password. It's a nice, easy one.

For more on this and other cyberoddities, visit Abend on Network World Fusion. Select NetRef, then Abend.

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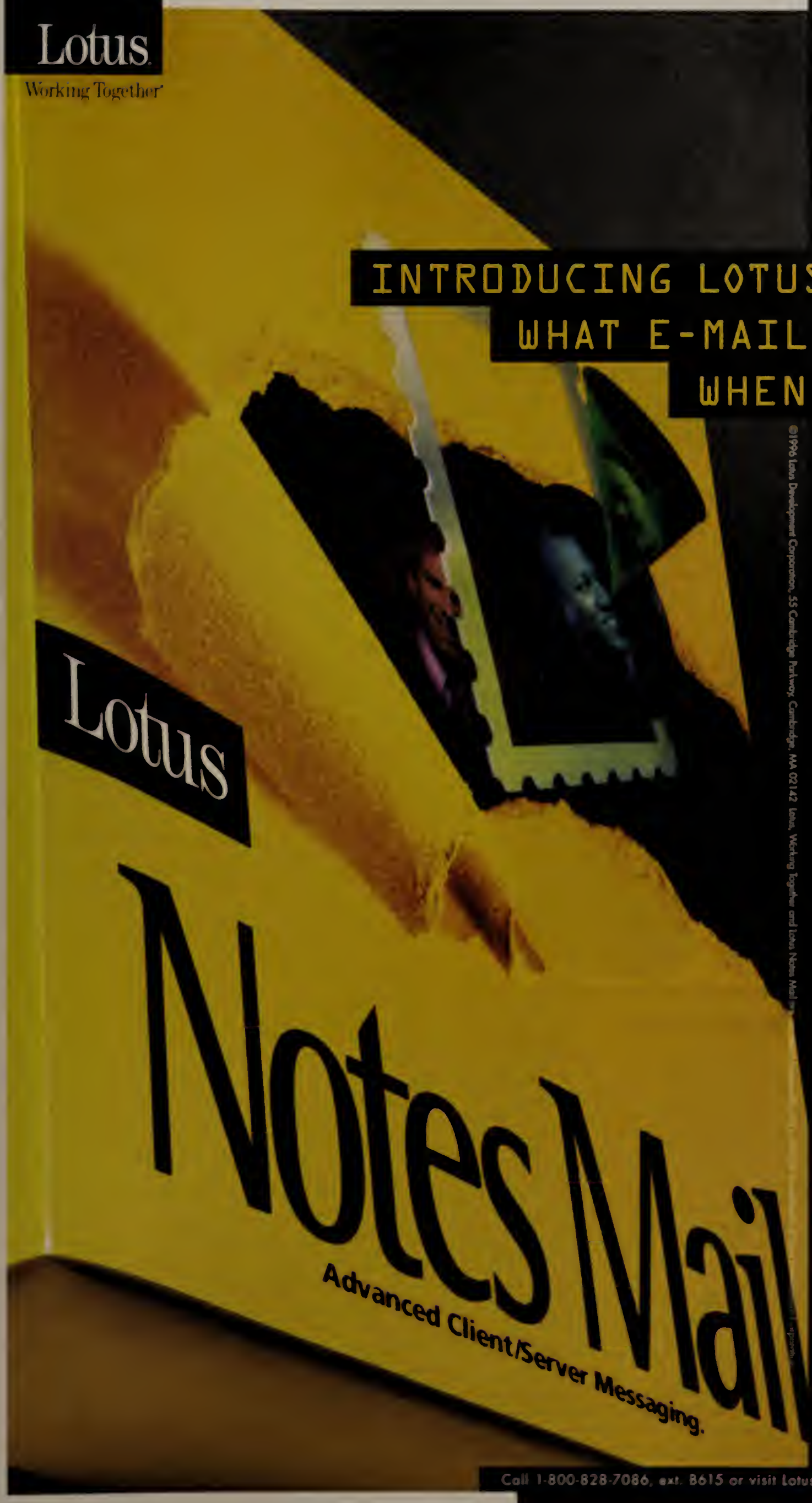

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GroupWise beta missing key pieces

The beta version of Novell, Inc.'s GroupWise XTD groupware product shipped last week with two critical elements missing: the client/server and document management features.

Novell's *Greenwood is singing a new tune.*

Novell admitted that the product will miss the second-quarter general availability date that company officials had been sticking to as late as three weeks ago (*NW*, March 4, page 1).

The company is currently saying the beta will last four to six months, meaning the final product will not be released until mid-July or mid-September.

Eldon Greenwood, Novell's director of groupware product management, said the company earlier this month decided to remove the client/server and document management elements because they were not stable enough to include in the first beta.

But rather than wait to ship a complete beta, the company wanted to make the APIs that were ready available to developers, according to Greenwood.

— Carol Sliwa

Novell recasts NetWare as an intranet server

By Kevin Fogarty
Salt Lake City

You better get a new dictionary.

In behind-the-scenes discussions at last week's BrainShare '96 conference, Novell, Inc. officials claimed NetWare is really an intranet server, not just a net operating system (NOS).

BrainShare '96 Novell roundup

The firm seems prepared to back up this assertion with product this year. The next version of NetWare, dubbed Green River, will be the first version of the NOS expressly intended to use World-Wide Web technology to distribute information within corporate LANs, said Robert Frankenberg, chairman and chief executive officer of Novell. Green River should ship this fall.

Novell wants to make this intranet approach simple, pledging to incorporate electronic commerce technology, Java and new development tools to ease the writing of 'Net-ready NetWare applications.

The company will execute this strategy with a little help from its friends. As expected, Novell last week announced partnerships with Sun Microsystems, Inc. and Open Market, Inc.

The first fruits of the Sun relationship will be borne in Green River. Novell will give Green River the Java Virtual Machine, code that lets Java applications run on a server and makes them accessible via a Web browser.

The Virtual Machine running on NetWare servers would allow corporate or commercial developers to build Java applications that run natively on NetWare, officials at the companies said.

Novell also announced an agreement to license SecureLink transactional technology from Open Market, Inc. in Cambridge, Mass. SecureLink encrypts transactional data and passes off transaction requests to a dedicated, secure server that can check credit, charge an account and relay an approved purchase order to a fulfillment house.

Meanwhile, Novell is reportedly continuing to hammer out a technology-sharing deal with Netscape Communications Corp.

Over the past year, Novell has unveiled a number of grand plans, leading to the question: Just what is NetWare now? In its latest answer, Novell not only calls it an intranet server, but also a special-purpose application server — one that still functions as a platform for network services such as file and print, and directories, but also supports Internet/intranet applications written in Java, Frankenberg said.

Try it, you'll like it

Novell may still be working out the details of its product plans, but BrainShare attendees seemed to like what they saw. Especially popular at the show was a demonstration where Novell distributed applications and displayed NetWare Directory Services (NDS) information in a Web page using the NetWare Web Server and an array of other products that have been announced or are already shipping.

The ability to make Web browsers privvy to network services in NDS could streamline the way network managers make resources available, said Ken Ivey, a systems analyst for the School of Health Related Professions at the University of Mississippi Medical Center. ■

Notes, NDS link

Lotus Development Corp. officials last week described what they called the first stage of an integration plan to link Lotus Notes 4.0 and Novell, Inc.'s NetWare Directory Services (NDS).

Although there is no integration of the Notes address book and NDS, Notes Servers will appear as objects within an NDS tree, making them accessible and manageable via NDS.

The greatest benefit of the integration would be letting Notes clients find Notes servers in NDS, rather than relying on Service Advertising Protocol broadcasts from Notes servers, said Neil DeLuca, principal Notes engineer for Lotus' Enterprise Support Services division.

Lotus also will ship the Notes NDSMGR, a Windows 3.1-based management application that can snap into NWAdmin. It is designed to let users create Notes server objects in the NDS tree that contain the Notes server's name, its IPX address, what Notes version it's running, its current status and an informal description of the server.

— Kevin Fogarty

Making NetWare application development easier

Novell, Inc. last week announced two sets of tools designed to make it easier for developers to build NetWare applications.

It rolled out the first version of Net2000, a set of APIs to help write software that uses NetWare features such as NetWare Directory Services.

A core part of Net2000 will be the Net2000 Component Management Service, which can track application objects written in different formats and link them across the network.

It will support applications written with Java, Microsoft Corp.'s Visual Basic and OLE technology, as well as other common interfaces, said Dave Clare, director of product management for Net2000.

Net2000 will also include OLE and other high-level interfaces for NetWare services, Clare said.

That effort may be in trouble, however. BrainShare '96 attendees heckled Novell engineers in a session about the basic abstraction layer OLE and other high-level interfaces will use to access the NetWare APIs, which currently can only be accessed using C code.

The object framework Novell engineers described is kludgy, only supports Windows and will be late to market if it is delivered with the rest of Net2000 in September, attendees charged.

To solve the problem, Novell may simply use OLE Directory Service (DS), an OLE-based directory access technology from Microsoft.

Novell officials acknowledged that they are considering OLE DS but would probably only use it in conjunction with their own abstraction technology.

In addition to the Net2000 preview, Novell announced it has licensed a Visual Basic interpreter and a run-time engine called Network Management Extensions from HiTecSoft Corp. (*NW*, March 4, page 8).

The Visual Basic interpreter would let corporate developers write stand-alone applications or utilities to manage NetWare networks using NetBasic, HiTecSoft's version of BASIC.

— Kevin Fogarty

Novell gearing up for Green River

Green River is flowing a mite bit slow.

The rollout of the next NetWare upgrade, code-named Green River, reportedly has been delayed about three months — from early summer to fall — so Novell can add support for Java and electronic commerce (see main story).

Hoping to keep the excitement alive, Novell laid out a list of new Green River utilities, as well as enhancements to NetWare Directory Services (NDS) and the NetWare installation procedure.

The installation procedure will be improved with a new Green River server that has the ability to automatically discover existing IPX and AppleTalk nodes on the network. It also will automatically detect drivers and interface cards.

The main utility due to ship with Green River is DS Manager, a high-level NDS utility that can monitor the performance of NDS and keep track of how current the information is in NDS replicas spread throughout the network.

Future versions of NetWare will include a new architecture for utilities that is based on Microsoft Corp.'s OLE technology.

The OLE Client Shell will provide a single interface from which users can manage a range of utilities from Novell and third parties.

The Green River version of NDS will have performance enhancements and a more stable replication process, partly because the process of replication has been made more fault tolerant. Rather than failing at the first sign of trouble, a particular replication process will have a limited ability to heal itself and continue the process.

Novell also plans to link NDS to X.500 directories by allowing X.500 systems to read NDS data.

— Kevin Fogarty

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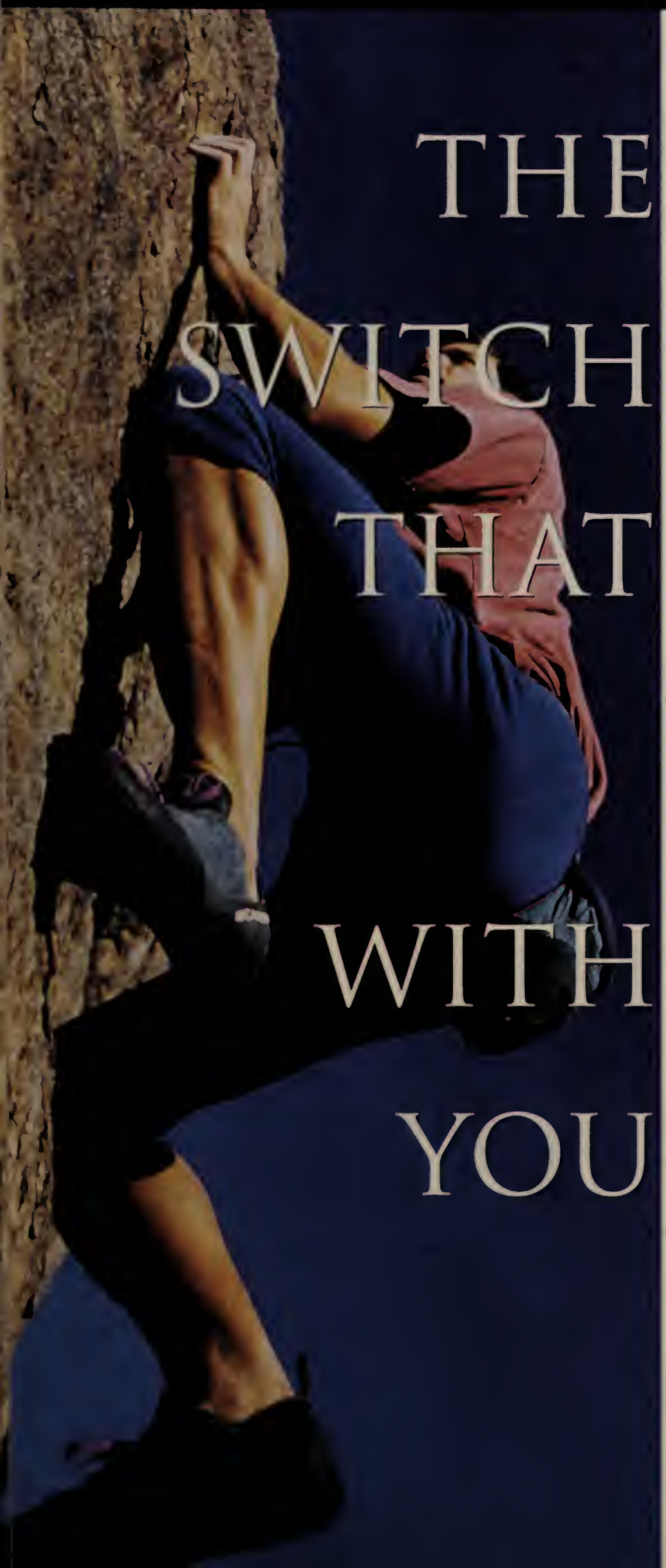

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Bay Networks

Clinton proposes auctioning off new toll-free 888 numbers

By David Rohde
Washington, D.C.

The Clinton administration last week joined the movement by some members of Congress to put the nation's 888 toll-free telephone numbers up for auction.

But user representatives said they were making headway in an effort to convince Congress to hold hearings on the issue, ending the threat that an auction could be slipped into one of Congress's repeated short-term budget resolutions.

Such hearings would mean that the proposal would be deferred until President Clinton and Republicans in Congress strike a permanent deal on the federal budget, Washington insiders said.

In his fiscal year 1997 budget request released last week, Clinton suggested selling 888 numbers to the highest bidder, echoing proposals floating around Capitol Hill in recent weeks (*NW*, March 4, page 1). The Office of Management and Budget (OMB) estimated such an auction would raise $700 million, particularly from so-called vanity numbers spelling out recognizable words (see graphic).

Deficit reduction

The Clinton administration's estimate of revenue from auctioning 888 numbers:

1997	$200 million
1998	$300 million
1999	$200 million

Annual estimates are for fiscal years running from Oct. 1 to Sept. 30.

SOURCE: OMB, WASHINGTON, D.C.

Bills to auction 888 numbers have not actually been introduced, according to Mike Jankowski, an attorney here for the American Car Rental Association, which vigorously opposes auctions.

But several months ago, emissaries for Federal Communications Commission Chairman Reed Hundt approached the White House about the idea, noting that auctions could raise money to reduce the federal budget deficit. "That caught the attention of OMB," Jankowski said. ■

AT&T enters Notes arena – again

Company now to build parts of Lotus' Notes groupware into Web services.

By Joanie Wexler
Basking Ridge, N.J.

AT&T shed a thin point of light last week on the role Lotus Notes will play in its future.

The company said it now plans to build components of Lotus Development Corp.'s Notes groupware into the collaborative services it will eventually offer on the World-Wide Web.

The AT&T plan — still wanting for product specifics and time frames — was announced just weeks after the company killed off its months-old Network Notes service late last month. AT&T at that time said it would shift its focus from a proprietary Notes service to Internet-oriented endeavors.

The forthcoming Internet-based Notes service "will not be stand-alone with dedicated customer care and billing services," explained Scott Perry, AT&T vice president of business multimedia services. Instead, Notes Release 4.2 Server capabilities will be part of a general platform of services that run on the Web and are accessible by standard Web browsers, according to Perry.

He said the Web-based Notes capabilities would allow AT&T to work with globa partners in the Multimedia Services Affil ate Forum (MSAF), a worldwide conso tium of carriers looking to interoperat their emerging application services.

"You'll still be able to replicate fro one Notes database to another," Per said. AT&T will still offer "what will b considered a Notes service," he adde but it is too early to specify whether it wi compete with full-blown Notes servic such as those offered by the IBM Glob Network.

Skepticism festers

However, some observers were skep cal of AT&T's involvement with the inte national group. Mike Rothman, vi president of global networking strategi at the Reston, Va., office of the MET Group, Inc. consultancy, said he would b surprised if AT&T expended muc energy driving interoperability of publ Notes services among MSAF members.

"AT&T is going to use Notes another back-end application that can b accessed via the Web," he said. "I don expect them to take a leadership role wi the international carriers." ■

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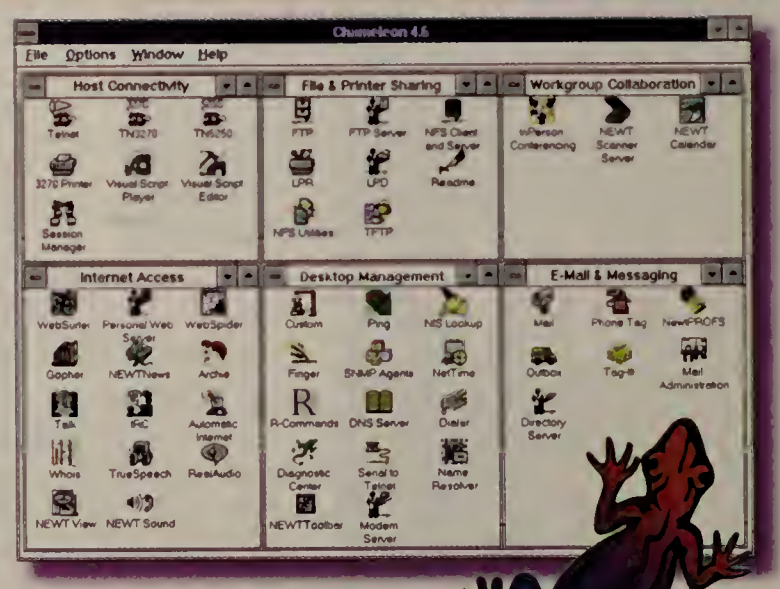

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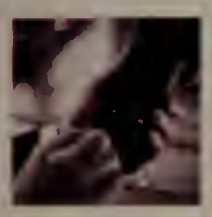

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IBM/Tivoli begin planning for future management wares

By Michael Cooney
Austin, Texas

Details about how IBM and Tivoli Systems, Inc. plan to dominate the world of distributed management will come at next week's NetWorld+Interop '96 show, but company officials at the recent Share, Inc. user conference here offered a preview.

The Tivoli Management Environment (TME) will be the base architecture for all future IBM network and systems management offerings. And in the wings are a raft of software agents for gathering systemwide IBM product data for TME-based applications and plans to integrate IBM's SystemView applications.

IBM's $743 million acquisition of Tivoli was finalized March 4. The move was widely viewed as a wake-up call for the systems and network management market and a coup for IBM, which picked up one of the industry's most respected multivendor distributed systems management companies.

"We'll be the first company to offer true end-to-end management applications from the mainframe to the desktop," said Scott Harmon, vice president of marketing and strategy for Tivoli. "Users will see a new, enhanced product line in about nine months and integrated architectural unification in about 12 months."

Although it was initially believed that mainframe products — particularly SystemView for MVS and IBM's NetView/390 — would be left alone, the ambiguity is gone. "Key SystemView products, including core NetView technology, will ultimately become part of the future TME package," said Leo Cole, IBM's manager of strategy and global design for systems management.

Future plans call for a completely integrated package that will give users applications and tools to manage everything from intranet Web servers to mainframe-based SNA nets, Harmon said. But that is well over a year away, he said.

IBM to roll out apps for Digital networks

Next month, IBM will unveil a new application for managing the Digital Equipment Corp. networking environment.

IBM and Ki Networks, Inc. will announce DEView for SystemView, a distributed net and systems management application that will let users gather data on topology, status and other functions within their enterprise Digital net resources.

DEView will run on IBM's SystemView for AIX platform first. It will also be ported to Hewlett-Packard Co.'s OpenView and Sun Microsystems, Inc.'s SunNet Manager, sources said.

The application was originally designed for PSA Peugeot Citron in France to centrally gather information from the carmaker's 10 factories over a TCP/IP backbone.

"In order to manage this environment in the past, users had to have DECnet and Digital's old DECmcc management product; Peugeot rejected that functionality," said one source close to the carmaker.

DEView uses the Simple Network Management Protocol to transfer data to and from Digital systems.

The tool automatically discovers the resources in the Digital environment — such as LANs, routers and legacy DECnet or Local Area Transport equipment — and presents the topology alongside other information, such as IBM resources, on a single SystemView screen.

The product will be available by midyear. Pricing was not available.

— Michael Cooney

In the short term, the companies will focus on making existing IBM and Tivoli products work together.

"We'll create a common console technology that will span the product line once it is all integrated in the TME environment," Harmon said. "We'll also provide the software tools to help migrate existing applications to the new environment."

Sources said IBM has settled on using Tivoli's Enterprise Console as a unifying technology, essentially replacing IBM's SystemView graphical user interface. The Enterprise Console monitors and automates responses to system events.

The companies will then concentrate on building application management software for IBM database management and other large systems, where Tivoli has not focused in the past, Cole said.

Specifically, new agents will be developed to pass mainframe-based data to the TME applications, Cole said. "We want to take care of our core NetView technologies first."

The SystemView agents that IBM is currently developing will become part of the new TME-based environment, said Jack Rivers, a SystemView advocate with IBM.

Basing everything on TME will bring more organization and cohesion to the SystemView development environment, said Tim Wilson, a senior consultant with Decisys, Inc. in Sterling, Va. "How much retooling SystemView developers will have to do will go a long way in determining how successful IBM is." ■

Tivoli moves to 'Net

Tivoli will fill in one of its key gaps this week when it rolls out a comprehensive package for managing Internet applications.

The IBM subsidiary will announce a new suite of tools that extends its Tivoli Management Environment (TME) to the 'Net. The software, dubbed net.TME, will let users easily manage Internet Web, news and mail servers in a distributed enterprise.

"We want to offer those users who are beginning to run their businesses on the Internet the same management capabilities they get with TME in the client/server arena," said Mark McClain, director of Internet initiatives at Tivoli. The company had defined Internet management applications as one of its top priorities or "power alleys" for 1996 earlier this year (*NW*, Dec. 25, 1995/Jan. 1, 1996, page 26).

Along with extensions to its TME family, McClain said, the company was working with SunSoft, Inc. and others to develop an Internet Management Specification (IMS) that defines a standard way of managing Internet resources. Tivoli hopes to make IMS an industry standard much in the same way it is currently backing the Applications Management Specification.

Included in net.TME is Tivoli/net.Commander, a software package that tracks the configuration and deployment of Internet servers and browser

With it, users can centrally define custom configurations, such as common bookmarks, and distribute them across enterprise Internet servers. It can also track multiple Domain Name Server addresses, which can get complicated in a large-scale intranet operation, McClain said.

Tivoli/Plus for net.Analysis, meanwhile, is a tool the company is developing in conjunction with net.Genesis, a Cambridge, Mass.-based software house. The package lets users drill down to specific servers and observe performance and traffic patterns.

The net.TME package runs on Sun Microsystems, Inc. SunOS and Solaris-based workstations.

It also supports Netscape Communications Corp. products running on Windows 95, Windows NT and Windows 3.1. Support for additional browsers and servers is expected later this year, McClain said.

Tivoli/net.Commander is available for $5,000 per server and $49 per client. Tivoli/Plus for net.Analysis will be available in the third quarter at a price of $1,500 per server.

—*Michael Cooney*

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Platinum releases database tools

By Barb Cole
Oakbrook Terrace, Ill.
Platinum Technology, Inc. this week will roll out a suite of database management tools aimed at companies downsizing mainframe applications to Sybase, Inc. and Microsoft Corp. databases.

The tools include:

- Fast Load and Fast Unload for moving data in and out of SQL Servers.
- SQL-Back for automating database backups.
- TSreorg for Sybase for tuning database tables and indexes.

While most databases come with basic utilities for copying data, they are not known for stellar performance. According to Scott Kane, vice president of Platinum's database management solutions division, a 1.2-million row table that takes more than 10 hours to copy to a Sybase database using the on-board utility can be copied in about two hours with Platinum's Fast Load.

"Sybase BCP [copy utility] is fairly fast, but if a vendor has a faster copy utility, we want to hear about it," said Letha Christian, lead database administrator at U.S. Fidelity and Guaranty Co., an insurance company in Baltimore. "This may be a sign that some of the high-quality utilities we are used to in the mainframe world are becoming available for client/server [databases]."

In the case of TSreorg, users with mixed database environments can buy one version of the tool, plus server-based knowledge modules for each database type. They can then manage their databases from a common console.

✆Platinum: (708) 620-5000.

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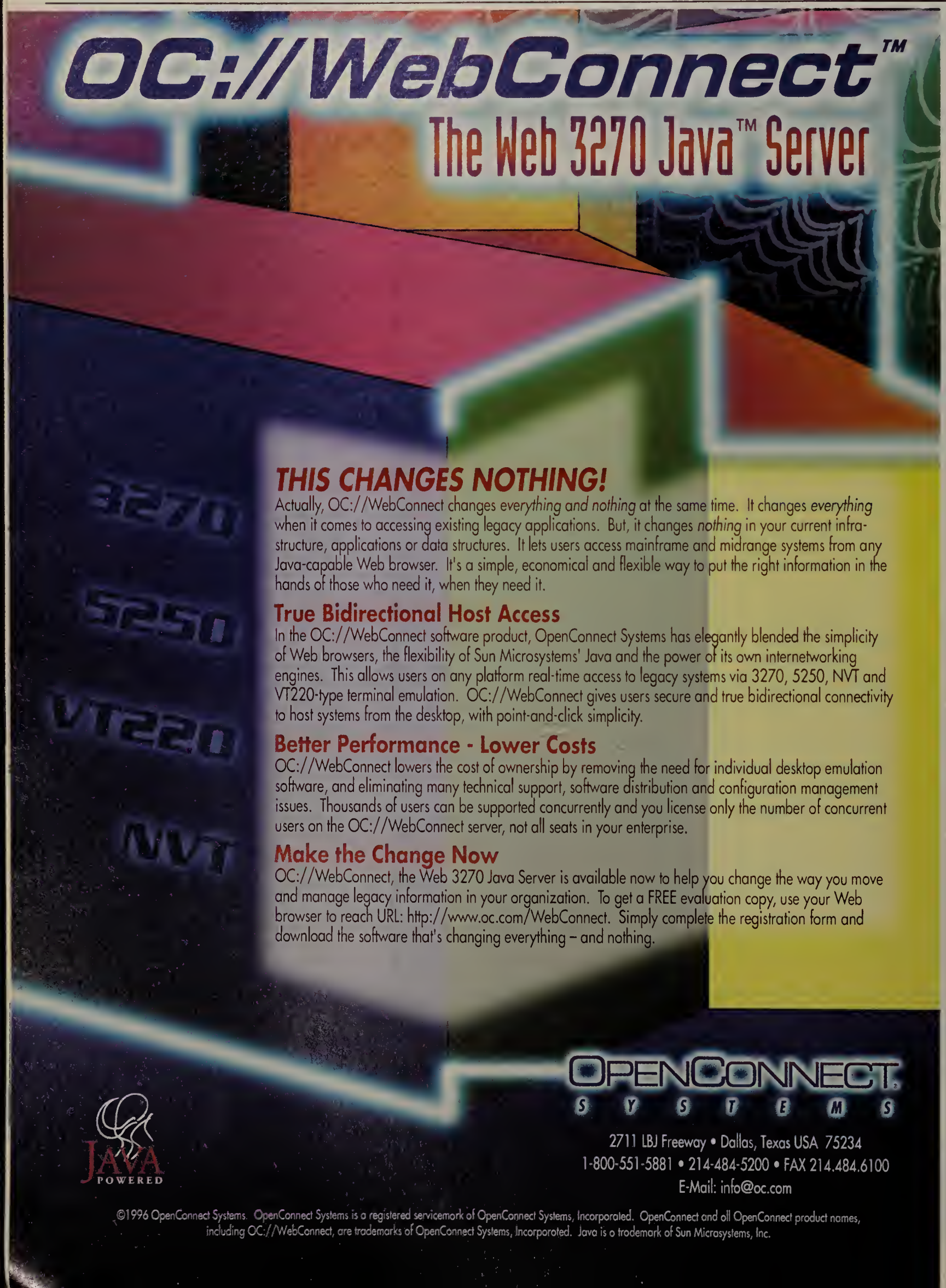
Product	Platform	Price	Availability
Fast Load and Fast Unload	Windows NT and Unix	$500 per server	April
SQL-Back	Unix	$1,500 per server	April
TSreorg for Sybase	Unix	$2,000 per client and $4,500 per server-based agent	May



Sybase to let users replicate via the 'Net

By Barb Cole
Emeryville, Calif.
Sybase, Inc. plans to support the Internet's Simple Mail Transport Protocol in its remote database, which will let users initiate replication sessions using Web browsers, company officials said last week.

SMTP support will enable customers to use the Internet to browse the Web and replicate data to corporate databases, according to Dave Boswell, vice president and general manager of Sybase's workplace division.

The company will add the capabilities to SQL Remote by the second quarter, Boswell said.

SQL Remote is the replication component of the company's SQL Anywhere mobile database, which currently supports replication through Microsoft Corp.'s Messaging Application Programming Interface as well as Sybase's own Enterprise Messaging Services messaging protocols.

SMTP support is part of a broader plan to make it easier for disconnected users to replicate transactions to corporate databases.

Sybase later this year will port SQL Remote to Windows NT, which will make it compatible with its enterprise edition, SQL Server 11.

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Briefs

■ **MCI Communications Corp.** *last week said it would crank up the capacity of its Internet backbone from 45M to 155M bit/sec by mid-April. The company also launched a* **dial 'Net services promotion** *that mimics AT&T's recent offering: five hours a month free and $2.50 an hour thereafter for existing MCI customers. Another option is $19.95 a month for unlimited usage.*

The carrier also said that by May, it will have the capability to accept ISDN signals from any local access provider. The company indicated that its MCI Metro local services subsidiary might give the traditional Bell companies a run for their money with ISDN services of its own, which will roll out over the next 12 to 18 months.

MCI (800) 550-0927

■ **Cisco Systems, Inc.** *has unveiled a constant bit rate module for its LightStream 2020* **Asynchronous Transfer Mode switch** *that provides Nx64 circuit emulation services, including voice support, over T1/E1 links. The module is available in eight- and 24-port versions for $22,000 and $34,000, respectively. The LightStream 2020 also now supports the ATM Forum's User-Network Interface 3.0 and 3.1 specifications, and it can be managed from the same CiscoView interface under which other Cisco products are managed.*

Cisco (408) 526-4000.

■ **OnStream Networks** *will introduce at NetWorld+Interop 96 in Las Vegas next week a Synchronous Optical Network (SONET) OC-3 and a High Speed Serial Interface User-Network Interface module for its CS600* **Asynchronous Transfer Mode access device,** *which integrates voice, video, data and LAN/ATM traffic.*

OnStream (408) 727-4545

ISDN and ATM as federal entitlements?

By David Rohde
Washington, D.C.

For years, universal access meant everyone had a right to a telephone, a strategy widely applauded. Then this year's Telecommunications Act threatened to expand that to 'Net access. But this month may have been too much for some to take, as the Federal Communications Commission hinted that ATM and ISDN be covered under the federal access mandate.

The FCC could face a buzz saw of opposition now that it has started to attach specific technologies, such as Asynchronous Transfer Mode, to the new universal service rules — technologies for which someone, perhaps you, is going to pay.

In a Notice of Proposed Rulemaking (NPRM) required by the new telecommunications law, the FCC this month solicited public comment on what telecommunications services should be included under the new definition of universal service and which should be eligible for special subsidies to schools, libraries and health care institutions.

Although largely a generic request for comment, the FCC gingerly indicated that it was considering ISDN and ATM as entitlements for certain health care providers.

The mere suggestion that technologies which have suffered so much difficulty in the market could become federal entitlements had some nearly apoplectic last week.

"Not even after pigs fly will we support that," fumed Brian Moir, general counsel for the International Communications Association user group. "There is not even a semi-laughable demonstration of the need for those [as universal services]."

Current universal service rules provide that some telephone companies and their customers subsidize others — such as subscribers located far from switches — for so-called plain old telephone service, or POTS (*NW*, Feb. 12, page 8).

But observers said that the more the FCC expands the definition to include advanced data services, the more likely it is that local and long-distance carriers will have to raise their rates to pay for the new subsidies.

Moir said the FCC should be guided by what business and residential customers actually order, rather than industry hype, in devising the new rules, which must take effect by May 1997.

Not all users are opposed to some broadening of the universal service definition. "ISDN should be part of the universal service category," according to Matthew O'Brien, president of the Communications Managers Association and a network manager at Prodigy Services Co. in White Plains, N.Y.

But it should apply only to a broad universal service definition for everyone, O'Brien said, not to additional discounts for schools, libraries or health care institutions. ■

You'll find more info on Network World Fusion, including:

- A proposed FCC order on universal access
- A report by the FCC's Common Carrier bureau on the issue
- An on-line library of documents on universal access

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THE REAL ISDN

In citing ISDN as a candidate for universal service support, the FCC mislabeled it Integrated Systems Digital Network. ISDN stands for Integrated Services Digital Network.

GE uses PassageWay for CTI

By David Rohde

General Electric Co. found a new handle to support 2,000 agents at five call centers: using PassageWay Telephony Services from AT&T spin-off Lucent Technologies, Inc. for computer-telephone integration (CTI).

GE's goal is to achieve a uniform CTI architecture at its call centers serving the company's appliances division. The payoff? GE customer information housed in centralized data repositories can be accessed over a WAN. This information can therefore be used the same way by call center agents, regardless of where GE routes its 800 calls for appliances questions.

PassageWay uses the Telephony Services Application Programming Interface (TSAPI) to synchronize caller data and PC applications with the corresponding telephone call.

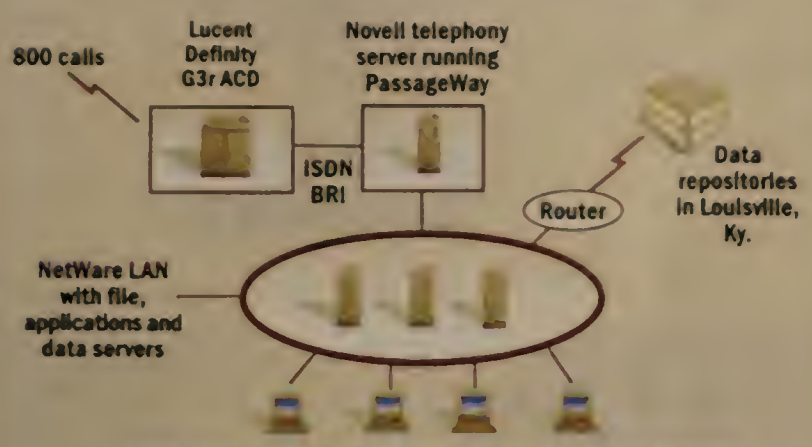
In its original implementation — the one being used by GE — TSAPI supports Windows clients on Novell, Inc. NetWare networks. However, Lucent earlier this month announced a developers' kit for Microsoft Corp.'s Windows NT server and has also broadened its client support.

The Windows application that displays caller data is FastCall from Acton, Mass.-based Aurora Systems, Inc., according

See GE, *page 29*

WASHING MACHINES AND COMPUTER TELEPHONY

General Electric's CTI architecture at its appliances division's five call centers:



Agent client workstations running Aurora FastCall on Windows

Management companies to show cards in Vegas

By Jim Duffy
Las Vegas

StonyBrook Software and ImageNet, Ltd. this week will show their WAN circuit and network design management hands at NetWorld+Interop 96.

NETWORLD INTEROP PREVIEW

StonyBrook will lay down WANServices Manager, an enhancement to its Windows-based RouterManager/Autobahn application for automated monitoring of multivendor routers, bridges and switches. WANServices Manager allows users to manage public WAN services, such as frame relay, ISDN and X.25, as a single entity, like a network device.

WANServices Manager consolidates all connections to a particular WAN service into an icon on the management console. So the user can have a separate icon representing each public WAN service employed in the network.

For instance, an icon could represent all of the frame relay circuits in a user's network. By clicking on the frame relay icon, the net administrator can see all of his company's frame relay connections in the network.

From there, the administrator can drill down to a particular segment, device, interface or

See Vegas, *page 29*

WAN MONITOR

Watching the demise of calling cards

Calling card issuers have identified the keys to success in the business calling card market.

These include global access, ease of use, flexible billing/reporting capabilities, superior customer service, cost-effectiveness, network reliability and security.

However, none of these things have been completely met by today's card products. Are they easy to use? If punching in as many as 25 digits to make a call is easy, then we guess they are. Now add in some additional key punching to send messages and create speed-dial lists, or spend hours training a voice card to recognize your voice. Easy to use? Not!

Are they cost-effective? Not really. Although telecommunications managers are routinely offered special customer arrangements to have their employees use these cards with usage rolling up into volume discount-based business calling plans, many still pay a lot of add-on fees, such as conference-call bridge fees.

With factors like these, it is no surprise that for the past five years, calls billed to calling cards have been steadily declining.

What we are seeing is a true paradigm shift, where travelers now want a solution to getting a broader range of tasks accomplished quickly and easily through more efficient mobile calling mechanisms.

Calling cards are now being replaced by a combination of wireless services, personal number services, voice messaging, electronic mail and fax services. One major hope on the horizon is intelligent peripheral (IP)-based Personal Assistant solutions, such as Wildfire's enhanced voice mail, which offers more advanced functionality. Call 1-800-WILDFIRE for a demo. Targeted to mobile professionals, Personal Assistants utilize speech-recognition technology that can manage all telephone-related communications, including incoming and outgoing calls, call routing, call screening, voice and data messaging, and voice dialing.

Daniel Brier and Christin Heckart

They can also schedule follow-up calls, provide reminders and maintain a contact list. Users can access a Personal Assistant from virtually any phone — without punching in 25 digits. Small wonder that Personal Assistants are replacing calling card contracts so often these days.

So is all well with the business traveler? Not quite. Our concern is that network operators will be tempted to fall back on outdated pricing strategies. For example, it was disappointing to see AT&T add a calling card surcharge-like per-call surcharge on its mobile user-oriented True Connections 500 number service.

Other pricing strategies have included additional fees, as much as $2.50, to leave a message from a caller to a called party. When we shared this bit of information with a friend, her response was, "I don't get charged additional fees when I leave a message on an answering machine."

These pricing moves do more to impede usage than to stimulate it.

We hope Personal Assistant services can be integrated into an entire communications package similar to those services that combine dedicated and switched voice and data services today. So in addition to calling cards (if you want them) you can get a range of Personal Assistant-like services.

And you won't have to worry about waking up your assistant in the middle of the night to find a phone number for you.

Briere is president and Heckart is director of broadband with TeleChoice, Inc., a consultancy in Verona, N.J. They can be reached at danny_briere@telechoice.com or christin_heckart@telechoice.com.

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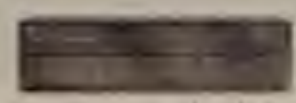

Access Stack Node and Backbone [illegible] High-speed network layer [illegible]

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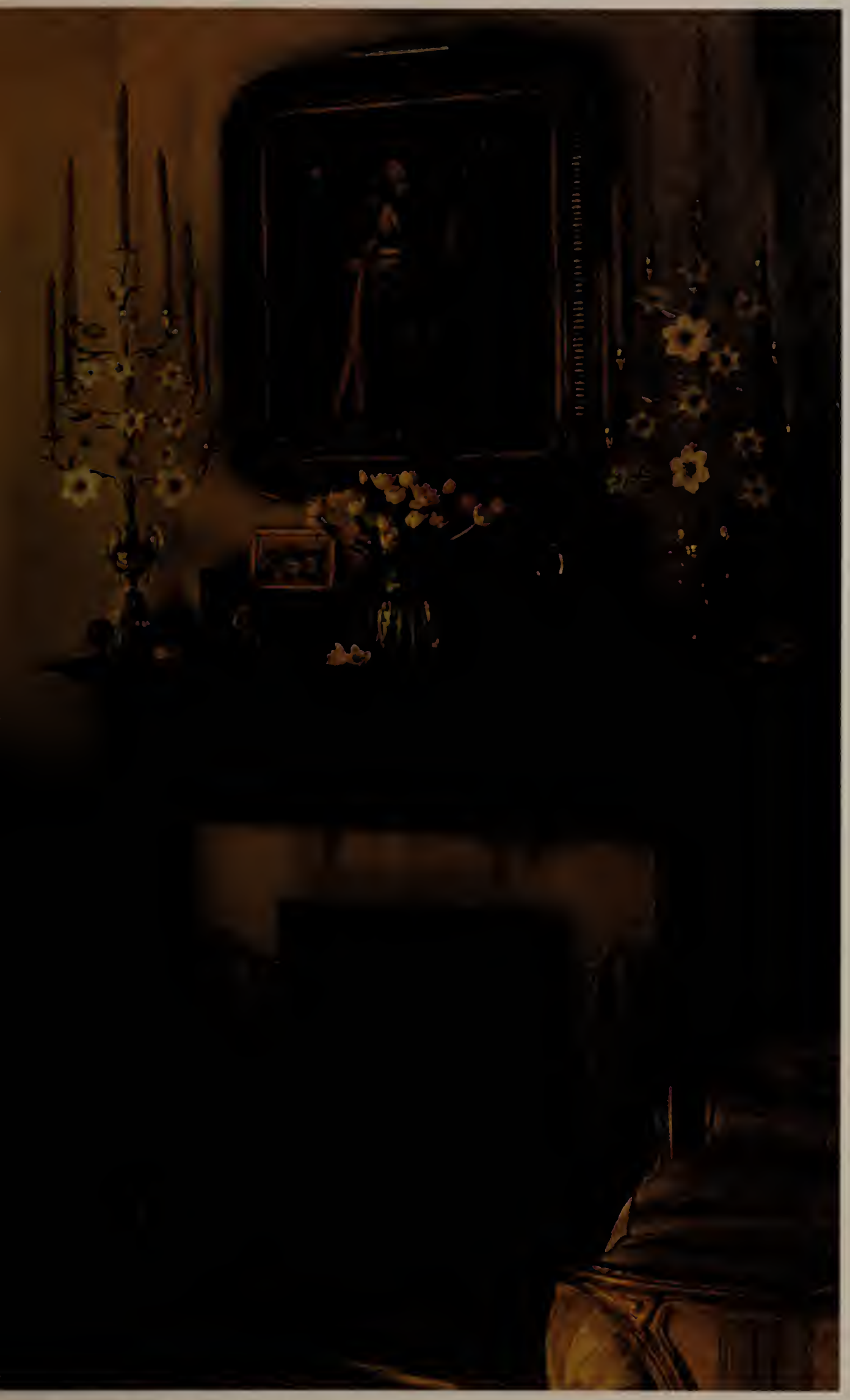

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Sprint boots some users off 'Net

ISPs are blocking traffic of users with long addresses to prevent clogs.

By Joanie Wexler

Internet traffic jams have gotten so bad that some users are getting kicked off the 'Net by their own service provider.

Sprint Corp. confirmed last week it has been blocking some users and Web sites with IP addresses longer than 18 bits to keep router tables from overflowing and its backbone from browning out. Users and Web sites with long addresses assigned by the Internet Network Information Center (InterNIC), rather than by an Internet service provider (ISP), are being filtered off the Sprint backbone, said Alecia Cooper, group manager of Internet access services at Sprint.

The filtering applies to commercial, or Class C, IP addresses beginning with a 206 or higher network identification number. Addresses beginning with 207 are filtered if they are longer than 17 bits.

This means those users' traffic, such as electronic mail and file transfers, does not get sent if it must traverse the Sprint network to get to its destination. It also means a Web site with an offending address is unreachable if it requires users to travel any portion of the Sprint backbone to get to it.

"It would be like having a phone number that some people couldn't dial," grumbled the manager of a Web design company, who preferred not to be identified. "What's the point?"

'Net angioplasty

Cooper said the filtering procedure complies with recommendations of the North American Network Operators' Group. This group advises ISPs to block such addresses to minimize the number of router table entries required on the internetworking devices, which are getting sapped by huge volumes of traffic.

Huge blocks of addresses assigned by ISPs, for example, can represent a single router table entry. Meanwhile, smaller ISPs or other customers getting small numbers of addresses directly from InterNIC can suck up multiple router table entries and waste valuable capacity, Cooper explained.

Filtering is one way to keep traffic moving for the rest of the user community. But it also makes a huge hunk of address space unusable, which intensifies the shortage of IP addresses, observers noted.

Sprint has long been having trouble with congestion on its backbone. But in January, Cooper indicated that the installation of Cisco Systems, Inc. 7513s, with larger router table capacity — not filtering — should solve the problem (NW, Jan. 22, page 21). However, last week, she conceded the filtering has been going on since last summer.

Red flag raised

Users with the addresses have been warned, Cooper said. InterNIC, which assigns registered IP addresses, tells anyone obtaining long addresses that the address might not be routable.

Why would InterNIC assign unroutable addresses?

"We respond to requests" for addresses of a certain length, said David Graves, business manager at Network Solutions, Inc., the company that supplies registration services to InterNIC. "We explain what it means to not have global routability and suggest the user get the addresses from their upstream [ISP]. Usually, we're successful."

Other major ISPs, such as MCI Communications Corp., UUNET Technologies, Inc. and BBN Planet, have held off filtering and are said to be eyeing new, ultra-strength backbone router options to solve the problem.

One option might be coming from start-up NetStar, Inc. in Minneapolis. The company is running ISP trials of its GigaRouter, a router designed to scale to the size of the masses.

Mark Garver, vice president of sales and marketing, said the router accommodates 150,000 router table entries, in contrast to the 20,000 or so allowed by the high-end backbone routers installed in ISP networks today. ■

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Microsoft comes to the aid of ISDN

By Tim Greene

Maybe ISDN vendors have finally tired of user complaints. Or maybe they feel threatened by faster cable modems or Asymmetrical Digital Subscriber Line (ADSL) technology. Or maybe it's both.

Whatever the reason, within the past month, vendors have lifted some of the difficulties ordering and provisioning lines, with the latest advance being a uniform procedure to simplify installing ISDN equipment.

Also recently, Microsoft Corp. set up a World-Wide Web site, Get ISDN, where customers can fill out order forms for ISDN lines that Microsoft will forward to the appropriate local exchange carrier (LEC). Participating LECs, some of which have been knocked for poor ISDN customer service, promise to respond within two days. Microsoft hopes the faster speed ISDN offers — up to 128K bit/sec over standard phone lines — for access to its on-line service, The Microsoft Network, will encourage people to use it more.

The Web site and other efforts to simplify ISDN for the user are important if the technology is to spread widely before being overrun by ADSL and cable modems.

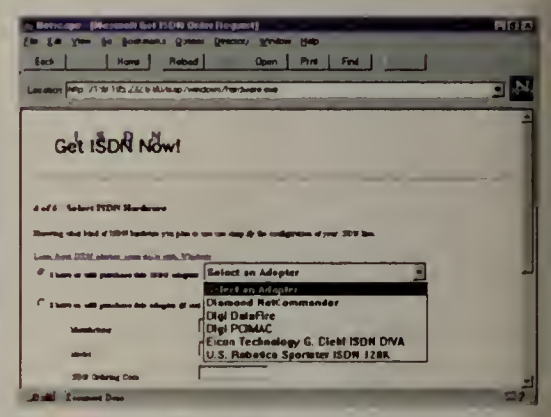
"That plug-and-play we all are hoping for is still not there, but this clearly makes ordering easier," said Sanjay Mewada, ISDN analyst for The Yankee Group in Boston.

ADSL and cable modem services — both offering greater bandwidth than ISDN — are expected to make an appearance as commercial services within 18 months, Mewada said. That may relegate ISDN to an interim service, or users might skip over ISDN and just wait for the faster alternatives.

The Web site takes customers through six pages of questions about where the customer site is and what kind of gear the user has or wants.

The customer is encouraged to submit simple ISDN ordering codes associated with its equipment rather than lengthy, confusing lists of switch parameters. That makes it more likely that the LEC will provision the line correctly the first time.

All but one of the major LECs, SBC Communications, Inc., have agreed to support the Microsoft effort.



Microsoft's *Get ISDN Web site walks users through ordering ISDN lines and even suggests specific gear to try.*

In addition to using the Web site to order service, users can access it to download ISDN drivers for Windows 95 machines.

Beyond Microsoft's efforts, the National ISDN Council, made up of all the RBOCs plus other LECs, have agreed to support a single set of Service Profile IDentifiers (SPID). Those are numbers that must be fed to the ISDN net from the user premises to identify what kind of customer premises equipment is on the line. Carriers will announce their implementation plans for the uniform SPIDs in June.

Making SPIDs uniform lets vendors of ISDN gear provide printed details about entering them, making the provisioning process quicker and easier.

Other efforts to speed ISDN ordering:

- Equipment vendors and carriers banded together to support four popular ordering codes, making it easier to set carrier switches correctly for individual users.
- A group of vendors supported a scheme to add and drop bandwidth as demand warrants.
- New technology emerged to broaden the range of ISDN up to 30,500 feet beyond the central office switch without costly repeaters.

To reach the Microsoft ISDN site, point your Web browser at http://www.microsoft.com/windows/getisdn. ■

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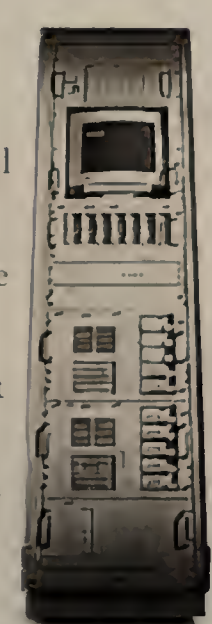

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Vegas

Continued from page 19

even an individual virtual circuit. The tool can then be used to troubleshoot problems, detect congestion or analyze how effectively bandwidth is being utilized.

WANServices Manager will face competition from Visual Networks, Inc.'s Visual UpTime product. The Visual Networks offering recently received a major endorsement from Hewlett-Packard Co., which licensed elements of it for use in its NetMetrix line of WAN monitors.

WANServices Manager will be available in June, free of charge to Router Manager Antobahn users.

Separately, start-up ImageNet will enter the network management game by wagering Cane, a Windows NT-based application that enables network managers to evaluate the validity of network design. It also enables the simulation of network performance and can be used to quantify how much it will cost to set up a network.

Cane relies on an object database of detailed device libraries about network equipment from several leading vendors. The database gives net managers the information needed to determine which network interface card is compatible with which workstation, server or hub, and then tests several design alternatives to measure cost and performance.

But due to its sophistication, Cane may only be suitable for resellers and systems integrators, analysts said.

An autodiscovery tool would make Cane more appealing to end users, said Brian Burba, an analyst at International Data Corp. in Framingham, Mass.

Pricing for Cane, which will be available May 1, starts at $4,995.

StonyBrook: (516) 567-6060; ImageNet (Israel): 972-3-5783178.

IMAGENET SNAPSHOT

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Headquarters: Bnei Brak, Israel

Investors: Trinet Venture Capital, Ltd. Ampal-American Israel Corp.

Product: Cane, an object oriented software tool for designing, installing and maintaining new and existing computer networks.

Market: The network design tool market is expected to grow from $260 million in 1995 to $910 million in 2000, according to ImageNet.

Executives: Moshe Bar Niv, chairman of the board; Raphael Epstein, president and chief executive officer.

GE

Continued from page 19

to Joe Vicars, a GE senior systems professional.

But what is the ultimate reason Vicars chose PassageWay and TSAPI rather than proprietary CTI schemes? The two tools hold out the promise for extensive third-party software development, given the link to multiple private branch exchange and automatic call distribution (ACD) systems. Such application development has been touted for several years by CTI evangelists, but it has been slow to develop. In fact, AT&T's other spin-off, NCR Corp., this month disclosed it will use proprietary links with large PBX and ACD systems for its new CTI Solutions for Call Centers.

Under the CTI Solutions architecture, an ISDN link is established between the voice switch and NCR's WorldMark Unix server, explained Mike DeBrosse, NCR's assistant vice president for call center solutions marketing.

The manager can then harness WAN links to periodically download customer data from data warehouses — typically located in a corporation's data center — to so-called data marts. These marts sit on the same call center LAN as the WorldMark servers, DeBrosse said.

As a result, when a call arrives in a call center, the agent not only has access to a variety of NCR-developed customized applications, but also to an unusually rich set of caller data, he claimed.

For example, a bank call center agent can view a screen displaying all the caller's accounts, the names of relatives with accounts at the same bank, a diary of past contacts with the caller and additional product suggestions ■

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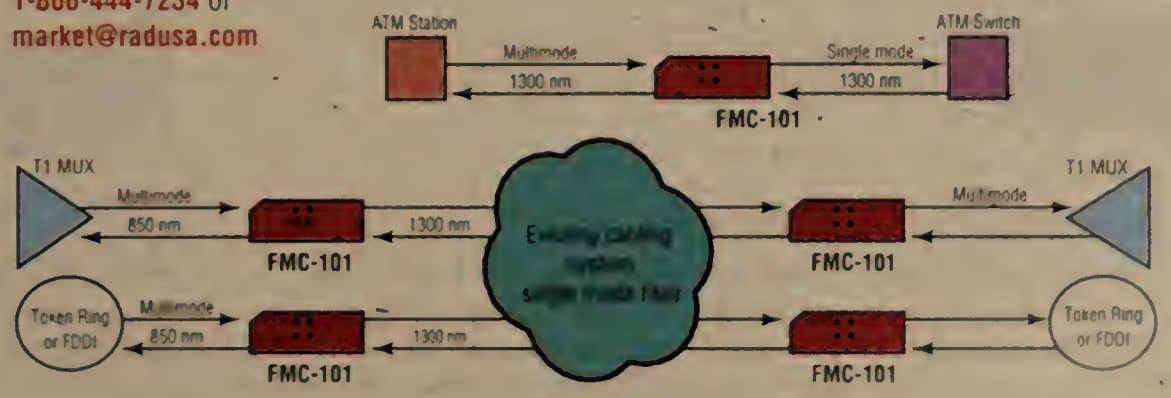

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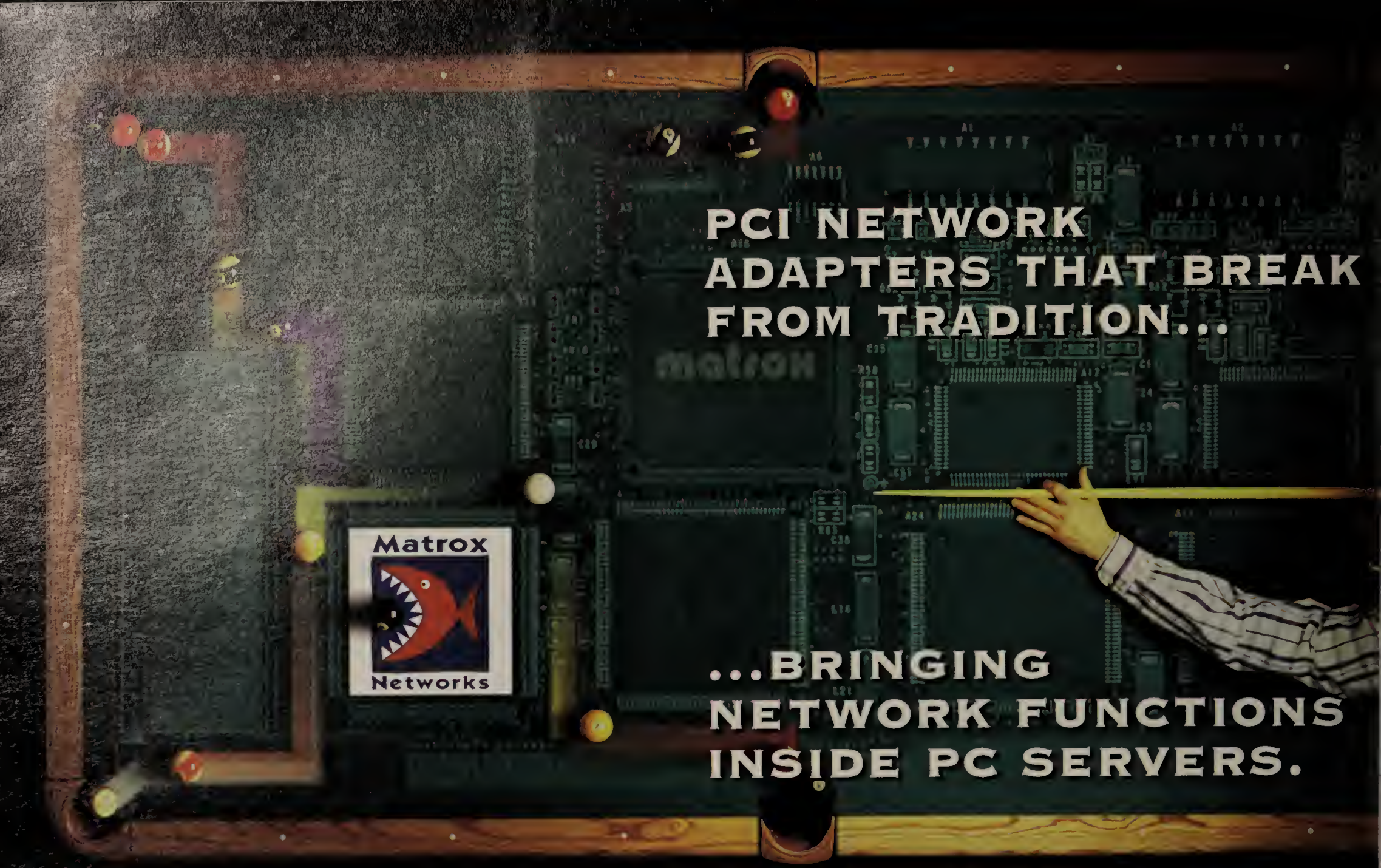

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The Shark HubCard is an ideal server upgrade solution for workgroups requiring Fast Ethernet. It has six 100BaseTX Ethernet ports, on-board SNMP management plus an additional Fast Ethernet port to connect to the server's CPU - all on a single PCI card. Shark HubCard increases bandwidth, eliminates bottlenecks and ensures low port to port latency. If network requirements increase, the HubCard is stackable up to a total of 24 ports using the on-board expansion bus.

Matrox Shark Fast Ethernet HubCard

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Matrox Shark-10/100 Multiport NIC is a PCI based Network Adapter designed especially for servers. It provides four independent channels of 10BaseT/100BaseTX Ethernet plus on-board processing on a single PCI board. Upgrade your server by simply replacing the existing single port Network Adapter card with the Shark Multiport NIC and obtain maximum performance, instant Fast Ethernet migration, Full Duplex support, low server CPU utilization and ease of use - while preserving precious PCI slots! Shark is ideally suited for high throughput servers that process multiple network tasks (i.e.: databases servers, multimedia servers, web servers, server clusters etc.).

Matrox Shark-10/100 Multiport NIC

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Matrox Shark Fast Ethernet Hub

Matrox Piranha Switch-10/100

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Briefs

■ **Digital Equipment Corp.** *in Maynard, Mass., last week detailed plans for its new* **ClearVISN management applications** *for managing multivendor environments.*

As expected, the company announced a suite of tools for managing routers and virtual LANs, and offered Remote Monitoring (RMON) and policy based management capabilities (NW, March 18, page 1).

Pricing for ClearVISN Router Manager is $4,995. The ClearVISN RMON Manager is priced at $2,995, and ClearVISN VLAN Manager is priced at $1,495. All products will ship in June.

Digital: (800) 457-8211.

■ **NBase Switch Communications** *in Chatsworth, Calif., will announce a* **10M/100M bit/sec switch** *at next month's NetWorld+Interop 96 show in Las Vegas. The MegaSwitch II is an eight port, standalone device that supports Ethernet or fast Ethernet on any port.*

MegaSwitch II can be managed via any Simple Network Management Protocol platform and supports Remote Monitoring.

Pricing starts at $7,960. The switch will be available in April.

NBase: (818) 773-0900.

■ **Lite-On Communications,** *a hub maker in Milpitas, Calif., last week announced a* **12-port 100M bit/sec hub** *to give Ethernet customers a tenfold performance boost. The LiteSpeed 100L is an unmanaged device that costs $1,299. The hub will be available in April.*

Lite-On: (408) 946-4873.

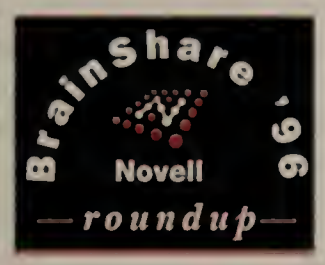
■ **A dozen companies** *today plan to announce the formation of the* **Wireless LAN Alliance (WLANA).** *The group, which includes the likes of 3Com Corp., IBM and Proxim, Inc., said it will provide would-be customers with vendor-independent information about wireless LAN applications and technologies.*

WLANA can be found on the Net at http://www.wlana.com.

ISVs ready to ease NetWare management and development

By Kevin Fogarty
Salt Lake City

New products that will make it easier to control security and write applications for NetWare networks will debut this week at Novell, Inc.'s Brainshare '96 technical conference.



Preferred Systems, Inc. (PSI), which already makes a tool for managing NetWare Directory Services directories, will demonstrate a new product for conducting NDS audits.

AuditWare for NDS enables net managers to scan their directory trees and identify security holes, said Jack Serfass, chairman, chief executive officer and president of PSI.

One feature of the product is designed to thwart end users — called stealth users — who have been given rights to an NDS directory but have chosen a NetWare 4.1 option that lets them make their NDS entries invisible to others in the tree. Stealth users can also elude access rights defined by a net manager.

AuditWare for NDS locates stealth users by indexing all of the objects in a tree, building a list of users who have access to those resources, then comparing that to the list of visible user objects. It can then create a list of stealth users by default, according to Serfass.

"NDS can be very complicated," he said. "The robustness of its security makes it complicated. We want to highlight its capabilities."

The product also can take a snapshot of all the objects in a tree and their rights, then use that snapshot as a baseline from which it can identify all changes in security. Another feature can do the same to a single object, identifying how the rights associated with that object have changed over time.

"It's an excellent tool for finding things like security rights on a number of servers, which can be a cumbersome process," said Matt Cain, an analyst at consultancy META Group, Inc.

Most tools gather security information on a server-by-server basis, which makes it difficult to figure out what rights a user has on multiple servers, he said.

Prices range from $695 for a 50-user version to $4,495 for 1,000 users. PSI is offering a 50% discount off AuditWare or DSStandard, the NDS management tool, for customers that

See **NetWare,** *page 38*

What's in the works for 3Com?

Q&A

3Com Corp. is one of the hottest companies in the internetworking market, largely because it never stands still. Not content with solid shares of the adapter, hub and switch markets, the company is now going after the WAN, remote access, Internet and intranet with a fervor. *Network World* Staff Writer Jodi Cohen recently spoke to 3Com Chief Executive Officer Eric Benhamou about where 3Com is headed next.

Where is 3Com putting most of its research and development dollars these days?

First of all, we are talking about roughly 10% of our revenue — so in calendar 1995, it was about $200 million. In calendar '96, it will probably be more like $300 million. We are placing a lot of emphasis on anything to do with LAN and ATM cell switching.

We are also placing a great emphasis on network management — a much greater percentage of the total in the past. The reason is that there is now a new appreciation for good network management, and people understand that without it, they

See **3Com,** *page 38*

MADGE READIES ATM ATTACK

Product	Pricing	Availability
Collage 740 ATM backbone switch	$13,495	April
Collage 530 Ethernet-to-ATM access switch	$9,995	April
Collage 540 token ring-to-ATM switch	$15,490	April
LANswitch LSA ATM switch module	$11,995	June

Madge adds to ATM line

ATM backbone switch and access devices set to debut.

By Jodi Cohen
Las Vegas

Madge Networks, Inc. last week rolled out a product suite that will allow customers to link Ethernet and token-ring LANs to ATM backbones.

The new Asynchronous Transfer Mode gear — on display next week at NetWorld+Interop 96 here — includes a backbone switch, Ethernet and token-ring access switches, as well as a 155M bit/sec module for Madge's existing switching hub. These products build on the company's previously announced line of 25M bit/sec ATM switches and adapter cards (*NW*, Dec. 4, 1995, page 6).

NETWORLD INTEROP PREVIEW

But unlike the 25M bit/sec offerings, which are resold from Whitetree Networks, Inc., the new gear is based on internally developed Application Specific Integrated Circuit technology.

The Collage 7-10 is a 16-port 155M bit/sec ATM switch for building campus backbone nets. The cut-through switch offers available bit rate support for flow control as well as LAN Emulation (LANE) for Ethernet and token-ring networks.

The switch also provides sophisticated management tools for gathering virtual circuit and per-port statistics, collecting information about endstations and access devices connected to the switch, as well as Remote Monitoring-like capabilities.

Madge also rolled out a trio of products that provide direct access from Ethernet and token-ring LANs to an ATM backbone. The Collage 530 Ethernet-to-ATM access switch offers 16 switched 10Base-T ports and a switched 155M bit/sec ATM port. The switch provides LANE client software and supports virtual LANs, traffic prioritization and congestion control.

Madge also offers the Collage 5-40, which provides 10 switched 4M or 16M bit/sec token-ring ports with a switched 155M bit/sec uplink.

For customers that have already deployed Madge's MultiNet switching hub, the company unveiled its LANswitch LSA ATM switch module. The 155M bit/sec module can be used as a high-speed link between hubs or to attach the hub directly to an ATM backbone.

Steve Greene, computer operations manager at Chief Auto Parts, Inc. in Dallas, is evaluating Madge's Collage 5-40 and 7-10 ATM switches and finds them more attractive than competing ATM gear from IBM.

"IBM requires you to buy a stand-alone external LAN Emulation server, whereas Madge has already built that feature into the box," Greene said. "So we like that Madge offers a simpler solution, which translates into lower pricing."

Surprisingly, both Bay Networks, Inc. and Cabletron Systems, Inc. steered him away from ATM technology and were not yet prepared to offer a full range of ATM products for token-ring users, he said.

✆ Madge: (800) 876-2343.

MADGE ONLINE

Download a primer on ATM technology and an overview of LAN emulation (http://www.nwfusion.com). Select News+ then Local Networks.

Network World Fusion

In-Site

User gives more than token support for Fast Ethernet

By Jodi Cohen
Chicago

Like many users looking for a bandwidth boost, Mark Kudel has started deploying Ethernet switches. What sets him apart is that he is not upgrading from Ethernet, but rather is scrapping a token-ring network in the process.

R.R. Donnelley gets a jump on Java. Page 41.

Kudel, strategic net architect at commercial printer R.R. Donnelley & Sons Co., said the firm's 700-node token-ring net could not handle growing amounts of traffic even after the rings were segmented. As a result, he and his staff started looking for a cost-effective solution to the net performance crunch.

"We looked at staying in a token-ring environment by implementing more sophisticated hubs with management, which would let us do better segmentation," Kudel said. "But the cost was over $500,000 more than the switched Ethernet devices we ended up installing."

He said the price difference between Ethernet and token-ring is staggering. For example, he is now buying Ethernet adapter cards for $62 each, as opposed to the Madge Networks, Inc. token-ring cards that cost him $500 a pop.

When Kudel began evaluating high-speed LAN alternatives a couple of years ago, there were few token-ring switches from which to choose. Since deploying token-ring switches would have required him to swap out existing controlled access units and lobe attachment modules, he decided to go with a more well-defined and lower cost environment like Ethernet.

Enter Ethernet

So in came Ethernet switching gear from 3Com Corp., which Kudel selected for its good price/performance ratio. The net was installed in November 1995, and the first group of users migrated to the Ethernet switches just last month.

The network consists of two 100M bit/sec FDDI backbone rings, each with a LANplex 6012 Ethernet-to-FDDI backbone switch that are linked to one another via a pair of 3Com NetBuilder II routers using FDDI interfaces. All of the company's 35 servers reside on the FDDI backbones.

Kudel (left) *and Rocholl have already seen performance gains.*

The LANplex 6012 switches provide links to LANplex 2500 Ethernet switches, which sit in wiring closets located on each of the building's nine floors. The LANplex 2500s provide both switched and shared 10M bit/sec connections to 72 stackable SuperStack FMS II Ethernet hubs. The LANplex 2500s are used to switch Ethernet traffic between stations attached to the hubs.

Previously, the company's network consisted of four token rings collapsed into a backbone. But the network could not handle all the traffic trying to access a cc:Mail server, and at least two of the company's critical applications for financial consolidations and taxes would often bring the network to its knees.

Bill Rocholl, technical staff member at R.R. Donnelley, said he already has seen big performance gains since getting the new network up and running.

"It now takes about two seconds for users to attach to the network and log in vs. about 20 seconds — and sometimes even minutes — in our old token-ring environment," he said.

Kudel anticipates the need for FDDI switching in the next 24 months. 3Com plans to announce switched FDDI modules for the LANplex 6012 as well as a stand-alone FDDI switch, he said.

Rocholl evaluated 155M bit/sec Asynchronous Transfer Mode as a backbone alternative and said it is still too soon to deploy the technology.

But Kudel and Rocholl said they expect switched Ethernet and FDDI to carry R.R. Donnelley for at least the next few years. ■

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Optimizes your network connections with advanced 32-bit TCP/IP VxD kernel	YES	NO	NO
Views, prints, converts documents and graphics without originating applications (KEYview™)	YES	NO	NO
Automatic network connection from the road or office (IP Switching)	YES	NO	NO
High-speed connectivity to anyone, anywhere (ISDN, X.25, CDPD)	YES	Partial	NO
Dynamic network connectivity with automatic router discovery and router fallback	YES	NO	NO
Advanced network troubleshooting tools keep you connected	YES	Partial	YES
Automatic scripting allows easy, one-click access to your most frequent connections	YES	NO	NO
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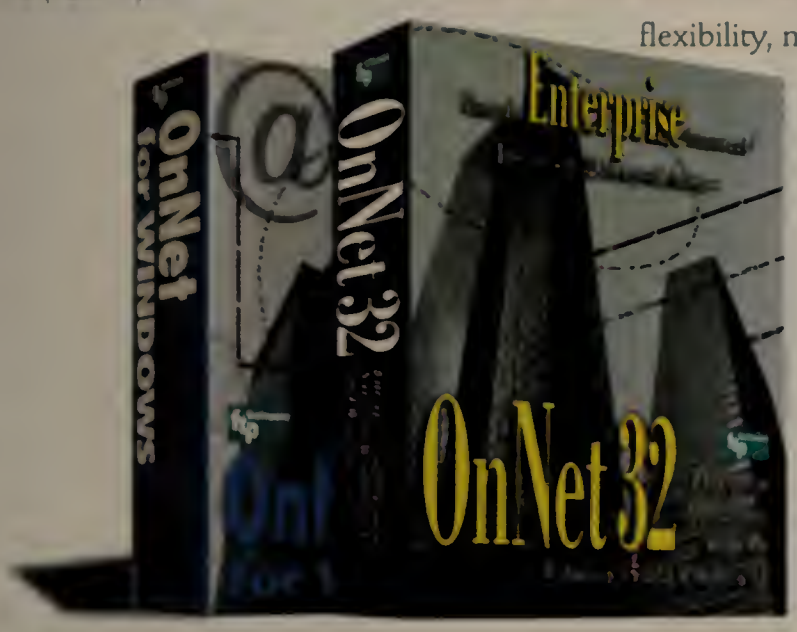

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WIRED WINDOWS

Dave Kearns

Java: Coming soon to a NOS near you

I watched a paradigm shift last week, and it was a wonder to behold.

At the opening address of Novell, Inc.'s BrainShare '96 conference in Salt Lake City, CEO Bob Frankenberg announced an agreement with Sun Microsystems, Inc. to license its Java technology. That, by itself, isn't much. After all, Microsoft has licensed Java for its Internet Information Server.

No, the breathtaking part of Novell's announcement is that Java will be integrated into the company's core NetWare network operating system — not simply into Novell's World-Wide Web server.

Looking around the audience of some 5,000 people — network administrators, software developers, and sales and marketing people — you could tell who would be leaders in 10 years time and who'd be left by the wayside. The leadership candidates all started to de-focus on the speaker and imagine the possibilities this could open up.

In the next few years, there will be more Java programmers than NetWare Loadable Module programmers and, consequently, many more Java applications.

Since the Java applets are portable across operating systems and platforms, the pressure is on Microsoft Corp. and IBM to add the Java engine to their net operating systems — Windows NT Server and OS/2 Warp Server. This will let developers leverage Java to create client/server applications for all three platforms. Soon after that, true enterprise network management from a desktop anywhere in the world should be a possibility.

In hindsight, it's not as much a revolutionary event as it is evolutionary. A few years ago, Novell brought forth its XCONSOLE software which allowed a network manager to monitor and tune a NetWare file server from any X Window Server. Building on that, the amazing growth of the Internet and the coming need to manage file servers across great distances, it was only a matter of time before something like Java applets for your LAN became a reality.

While the LAN management possibilities are probably of most interest to you, there also will be an explosive growth in client/server applications for your end users.

For those of you who have tried to ignore the rise of the Internet — especially the Web — it's time to jump in and start learning just as quickly as you can. You don't need to learn the HTML formatting language, HTTP or even the merits of one Web browser vs. another.

Tip of the week

You've probably noticed that the Windows 95 logon screen can be bypassed, bringing up the default user desktop. Now available is a free utility called Shutdown designed to stop this from happening. It can be accessed on the Web at http://www.creativelement.com/win95ann/. Trying to escape from, cancel or enter a new user name will simply bring up the Windows 95 logon screen again.

You do need to learn about Java. You need to learn how it works, what are the security mechanisms, distribution methods and user access modes. You need to learn it just as thoroughly as you learned NetWare Directory Services or NT's Domain services.

And you need to do all this quickly because Novell has promised to ship an operating system with the Java engine before the end of the year.

Kearns, a former network administrator, is a freelance writer and consultant located in Austin, Texas. He can be reached at dkearns@msn.com.

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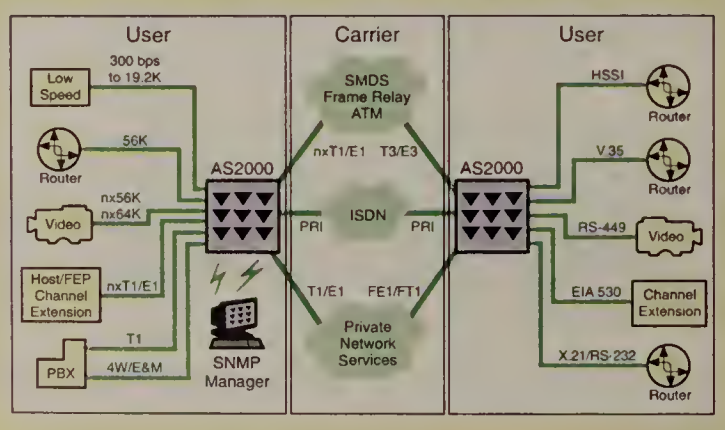

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NET RESULTS

Giving network management the respect it deserves

Skip MacAskill and Melinda Le Baron

We were at a strategy session the other day where one of the LAN industry's major players was mapping out its vision for the next two years. It made an elaborate presentation detailing the products and services it was preparing for release into the market.

Forty slides. Not one reference to network management.

In preparation for the NetWorld+ Interop show in Las Vegas next week, we've met with 11 campus LAN vendors over the past two weeks for announcement briefings. Of the 11 presentations, which averaged about 30 slides each, seven didn't even mention management until Slide 23 or later. Three only included it as a bullet item on the second-to-last slide. Only one vendor actually dedicated an entire presentation to network management.

Everyone seems to be paying lip service to network management, but many of the LAN vendors just don't seem to get it. Unlike in the past, companies are not willing to install new LAN products and then wait for the comprehensive network management applications to follow.

The problem for customers is that their networks are unquestionably multivendor. They're looking for a management architecture that allows heterogeneous devices from different vendors to be managed from a common graphical user interface (GUI) that will provide a single view of a shared database repository.

At Gartner, we term that "distributed device management." Realistic expectation? We think so. Achievable? Probably over the next four years.

This capability will rely heavily on the ability of the platform vendors, application developers and element management providers to work on standards.

In order to ensure that element management players — such as Bay Networks, Inc., 3Com Corp., Cisco Systems, Inc., Digital Equipment Corp., et al — are in a position to contribute to a common distributed device management environment, customers need to demand their LAN vendors support the following:

- Remote Monitoring (RMON). The element managers are the chief source for device-level troubleshooting, and RMON is a great tool with which to approach this problem proactively. Users should push the vendors to embed this functionality into new products — at no extra charge.
- RMON 2. The LAN vendors need to support some level of device management standardization, and RMON 2, which will provide network statistics all the way up to the application layer, is a big step in that direction.
- Convergence on virtual LAN standards. For virtual LANs to become a practical network management tool, vendors have to stop the politicking, develop some standards, and prove interoperability and scalability in multivendor networks.
- Acceptance of a common GUI. Providing a single GUI that will give users a common look and feel to the underlying management applications from different vendors cannot be overemphasized.

Vendors must face the fact that network management will probably never be the profit center they always hoped for. Users need a tremendous amount of help in this area, and it's time for the vendors to do the right thing and get the job done.

Le Baron is a research director and MacAskill a senior research analyst in Gartner Group, Inc.'s Network Computing Infrastructure group. They can be reached by E-mail at inquiry@gartner.com or by phone at (203) 316-1111.

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*In Stat Worldwide Enterprise Remote Access Market Share, 1995

*Dell'Oro Group, Worldwide Remote Node Server Market Share, First Half 1995

*IDC Worldwide Combined Hardware and Software Based Remote Access Server Market Share, First Half 1995

3Com

Continued from page 31

cannot manage the growth of their networks.

Particularly, we're focusing on the parts having to do with quality-of-service management as well as virtual LAN management. We are also putting a lot of emphasis on switched WAN technologies. Obviously, there is a bandwidth crisis in the WAN, and switched WAN services provide a way to cope.

In addition, we're placing a lot of emphasis on new fast LAN technologies, like Fast Ethernet. You will also see this reflected in a new generation of even higher speed chips and a new set of capabilities that go beyond those coming out of the IEEE standards body. Remote access is another market that is bound to grow extremely fast for many years, partly enabled by telecom reform and partly by the fact that corporations tend to be more spread out.

How will 3Com address its customers' increasingly sophisticated requirements for LAN packet switches?

The future direction of our LAN backbone switch line will clearly be in the area of greater levels of performance and greater levels of sophistication and bandwidth management. We are on the verge of offering four FDDI wire-speed switching modules for the LANplex 6000 chassis.

The only other vendor that has offered this functionality is Digital, which is in the form of a very high-end, expensive switch. So we will set new levels of price/performance when it comes to that category of equipment.

You should also expect that within the balance of 1996 there will be advances in terms of the backplane bandwidths of all the existing high-function switches. For example, Cellplex will roughly undergo a two-times improvement in bandwidth in the next configuration.

3Com *CEO Benhamou says his company is placing an emphasis on net management.*

How do you define the intranet?

Although the term happens to be fashionable today, there was another term before intranet that was perhaps not as fashionable: Client/server computing, [which] is basically the same thing. Intranet refers to client/ server computing over TCP/IP.

How does switching fit into the intranet market?

The server happens to be a Web-based server in this case, as opposed to a traditional server. But from a networking connectivity perspective, it is exactly the same thing.

This market is poised to enjoy very fast growth. Our point of view is that intranets — almost by definition — imply switching. It's not just storing and forwarding packets quickly. It requires a sophisticated form of switching that entails channeling information across virtual LANs, generating quality of service, providing different treatments to multimedia streams vs. standard datastreams, and creating an invisible fabric that brings together LANs and ATM cells. Companies that have established expertise and a reputation for high-level switching will be the winners in this market.

What kind of opportunities does telecom reform open for 3Com?

Assuming that telecom reform will happen rapidly, this will inevitably result in lower tariffs. This does not mean that some tariffs won't go up, but in the aggregate, tariffs will go down and there will be more choices. So what this means is that there will be an accelerated consumption of wide-area network bandwidth. And the diversity of services will increase, which will increase the requirement to have multifunction platforms [such as the ones we offer].

At the service provider level, you want to be able to decide whether to deliver information — perhaps an Internet service — across telephone, cable, ISDN or cellular nets. ■

NetWare

Continued from page 31

buy both products at once.

Scripting in NetWare

Separately, NobleNet, Inc. is ready to roll out its Client/ Server Toolkit for NetWare developers. The product is designed to help corporate or commercial developers build NetWare Loadable Modules (NLM) that feature a Windows front end and can pass standard remote procedure calls (RPC) to Unix or other application servers.

The tool kit consists of several existing products, including EZ-RPC for NetWare, a compiler that automatically generates NLMs that are callable using standard RPCs. It also includes an RPC Gateway and a new Distribution License that allows unlimited distribution of applications built with the kit.

The tool kit supports common application development tools, including Visual Basic, Visual C++ and Delphi. It costs $10,000 per server.

✆NobleNet: (508) 460-8222; PSI: (203) 937-3000.

BusinessBriefs

XLNT Designs, Inc., a workgroup LAN switch vendor in San Diego, last week appointed a new board of directors to refocus the company's LAN strategy. The new members — **William Botts, Harry Quackenboss, Michael Cope and Norman Dawson** — will shift the company away from its pure engineering focus to a more product-oriented strategy.

Quackenboss comes to the board from Cisco Systems, Inc., where he was general manager in charge of communications products. Dawson is president and chief executive officer of Metacomp, Inc. Cope comes to the board as founder and retired chief executive officer of Interphase Corp., and Botts, president of W.V. Associates, has expertise in software.

Tut Systems, Inc., a Pleasant Hill, Calif.-based provider of high-speed links over copper wiring, last week announced the formation of two new business units. The Public Networks Business Unit will be managed by **Linda Seale,** vice president and general manager of the unit, and target service providers.

The other business group — the Enterprise Networks Business Unit — will be headed up by **Nick Berberi.** The unit will concentrate on supplying high-bandwidth LAN connectivity products to end users.

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Special Focus

LAN MANAGEMENT

LAN management vendors go after the enterprise market

Intel, McAfee and Symantec brush up against management platform providers.

By Ben Heskett

The line between enterprise and LAN management tools is blurring.

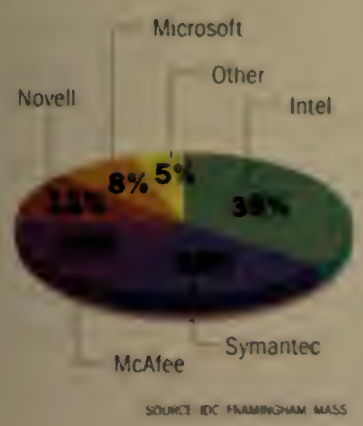
On one hand, enterprise management platform leaders such as Hewlett-Packard Co. are rolling out network operating system (NOS) management tools (*NW*, March 4, page 8). On the other hand, the leading LAN management software makers are confidently heading for the enterprise.

"Historically, the companies that have been successful going to new spaces are the ones that have moved up," said Rick Kreysar, vice president of marketing for McAfee, which is adding enterprise management tools to its LAN management base.

The evolution of LAN management products has moved rapidly over the past few years. LAN management vendors such as McAfee and Intel Corp. started out with point products in the early 1990s — including license metering, software distribution and antivirus tools — for NetWare administrators.

LAN management market shares

Based on estimates of customer spending in 1995.



SOURCE: IDC FRAMINGHAM, MASS.

McAfee's point products have grown to work over a number of platforms, including OS/2 and Macintosh. However, the company is waiting to see how OS/2 Warp Server is adopted before offering products in that space. Intel does not offer OS/2 support.

Once the firms' point products became hits, they started bundling them into suites, such as Intel's LANDesk, which made its debut in 1993. McAfee got into the suite game via the acquisition of BrightWorks and Saber LAN Workstation.

Where once there were hundreds of small LAN management tool vendors, a period of consolidation has left only a few established players. "Now the market is a little bit more mature," and that only helps the user, according to Terry Dixon, business unit manager for LANDesk.

After assembling suites, Intel and McAfee extended their product lines across different NOS platforms. They both plan to add Windows NT support this quarter.

Certain modules in LANDesk already support NT, but a full-blown cross-platform suite is due in beta sites next month, and in general release by the end of June. The company also is readying tools to manage Unix systems, Dixon said.

The next move for McAfee will be into the enterprise management market. It will unveil McAfee Enterprise Manager in the third quarter, providing customers with a product for managing servers and desktops across the wide area, according to Kreysar.

Intel officials said that rather than extending to the enterprise with new products, the company will work to integrate its LAN management products with existing enterprise management platforms.

Symantec Corp., another leading LAN management player, has evolved its product line in a different manner. The company shipped its first point products for LAN management more than three years ago with support for multiple platforms, said John Niednagel, a product manager with Symantec.

"When we talked to customers, they said, 'Gee, we sure do have a lot of NetWare, but we've got a lot of this and a little bit of that, and we really need something to manage across the board,'" he said.

Though Norton Administrator for Networks combined software metering, distribution and inventory capabilities in what could be dubbed a minisuite, Symantec is now moving into the full-fledged LAN management suite space. Two suites — the Norton Administrator Suite-Essential Edition (see story, this page) and the Norton Administrator Suite-Premiere Edition — are directed at the LAN and WAN, respectively.

Both suites will have server management capabilities spun into them by the end of the year, thanks to Symantec's recent acquisition of Fast Track, Inc. Previously, Symantec was focused on desktop management.

SunSoft, Inc. arrived late to the LAN management game, introducing PC-Admin toward the end of 1994. The firm saw an opportunity to help customers manage Windows-based nets through its TCP/IP and Network File System-based tools.

McAfee's *Kreysar says the next move for the firm will be into the enterprise management market.*

With the cross-platform Java programming language, the company hopes to offer a solution that is cross-platform with a strong information-gathering and distribution engine, said Gary Holmes, a product manager with SunSoft.

All of these products are intended to fill the space between sophisticated enterprise management platforms, such as HP's OpenView, and individual LAN management utilities.

Dov Goldman, a systems integrator with Dialog Technologies, Ltd. in Valhalla, N.Y., said many of his customers are looking for simple tools such as Saber LAN Workstation or LANDesk to manage more of their net. Many users cannot make sense of complicated network management platforms such as OpenView or Solstice Enterprise Manager, he said.

What it comes down to, Goldman said, is that hardware devices such as servers and routers do not fail very often. He said that with more focused suites incorporating more desktop management functions, administrators can view and anticipate the largest problem on networks: people fiddling with their computers.

Jose Aguilar, a senior systems engineer with energy company MAPCO, Inc. in Tulsa, Okla., agreed: "A lot of vendors are trying to close the management gap." Aguilar uses LANDesk to manage about 2,000 nodes. He is eager to see Intel's Windows NT and Unix cross-platform product. ■

Symantec wants a piece of the suite life

Symantec Corp. will enter the LAN management suite market next week at NetWorld+Interop 96 by bundling a set of its existing point products.

The Norton Administrator Suite (NAS)-Essential Edition will include the inventory, metering and software distribution capabilities found in Norton Administrator for Networks with Symantec's antivirus, remote access and desktop configuration point product offerings. Symantec officials said the suite targets administrators of workgroup LANs supporting up to about 500 end users.

A 10-node NAS-Essential Edition license is available now for $633. It works with NetWare, VINES, Windows NT Server and other popular network operating systems. Clients supported include DOS, Windows 95 and NT, Macintosh and OS/2.

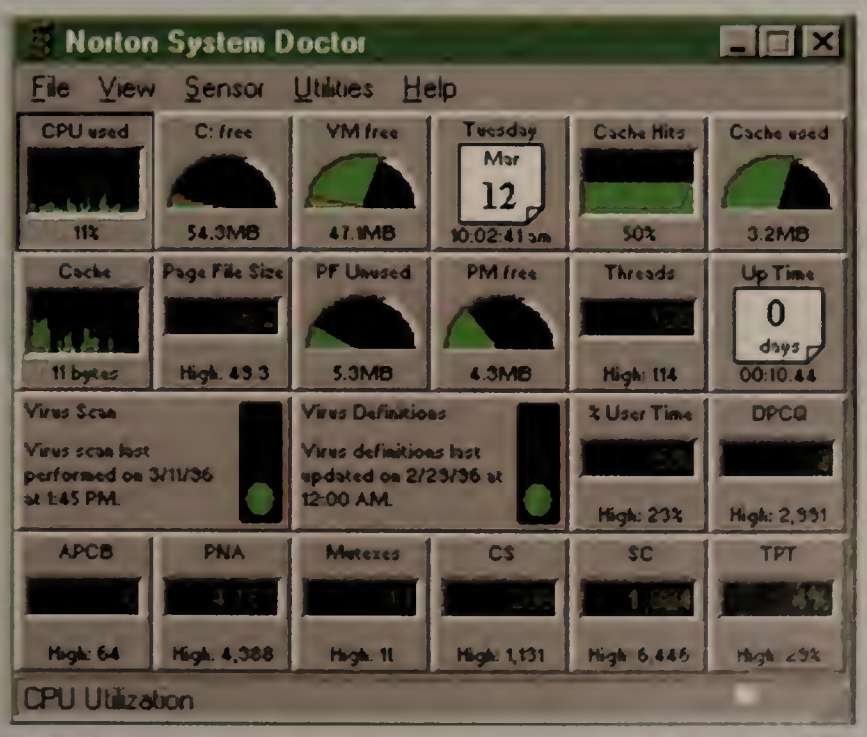
Also, Symantec will extend its Norton Tools to NT desktops. Norton NT Tools will include:

- A virus scanner that can identify thousands of different PC viruses, then eliminate them and do repairs.
- Norton File Manager, which can be used to quickly find files and programs across a net.
- Norton FastFind, which allows fast file searches by name, date, size, attributes and text within the files.
- Norton Zip/Unzip, a file compression and decompression tool.
- Norton System Doctor and Norton System Information desktop monitoring tools.

Norton NT Tools costs $49.95 and is available now.

For more information, contact Symantec at (800) 441-7234.

— *Ben Heskett*



Norton *System Doctor allows administrators to set thresholds to monitor Windows NT workstation performance*

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Briefs

■ **Psion, Inc.,** *a Concord, Mass., subsidiary of U.K.-based Psion PLC, next month will ship software that lets* **users of its Psion Series 3a palmtop computer check their electronic mail.** *The initial version of PsiMail will work only with ccMail and Microsoft Mail systems, but an Internet version is due out in the fall.*

The estimated cost of a five-license package is $599.

Psion: (508) 371-0310.

■ **Business Objects, Inc.** *in Cupertino, Calif., this week will announce BusinessObjects 4.0, a new version of its modular query tool that now includes* **on-line analytical processing (OLAP)** *capabilities. The OLAP component, known as BusinessObjects Explorer, lets users slice and dice information stored in relational databases, OLAP servers or flat files.*

The software also has a new module, Document Agent, that lets users move scheduling, processing and distribution of reports to various servers on the network. Available now, BusinessObjects 4.0 runs on Windows, Macintosh and Unix.

Pricing for the basic component is $595. Explorer is priced at $695, and Document Agent costs $150.

Business Objects: (408) 973-9300.

■ *Burlington, Mass.-based* **Object Design, Inc.** *last week announced a suite of products for building* **World-Wide Web applications** *based on its ObjectStore database. The new tools include ObjectForms, a development tool for building Web-based applications and six object managers that provide support for text, audio, video, image, HTML data and Java applets. The software is available now on Windows NT; Solaris versions are due next month.*

Pricing is $3,500 for ObjectForms and ranges from $395 to $2,695 for the individual Object Managers.

Object Design: (617) 674-5000.

A sampling of groupware beyond Notes

Company	Product	Key features
Attachmate	OpenMind	Conferencing, document management
Fujitsu	TeamWARE	Messaging, conferencing, workflow, calendaring/scheduling, document management, discussion database
The MESA Group	Conference+	Conferencing, application development, document management
Netscape	Collabra Share	Conferencing, document management, discussion database
Oracle	InterOffice	Messaging, conferencing, workflow, calendaring/scheduling, document management, discussion database
SoftArc	FirstClass	Messaging, conferencing

Groupware beyond Notes

Lotus challenges need to 'do something different or better.'

By Carol Sliwa

Back in 1993, when Robert Ventre Associates, Inc. won a multimillion dollar contract to train the Kuwaiti military to use Patriot missiles, the company had a problem: How would its three-person management team in Newburyport, Mass., oversee a staff of 90 instructors and local administrators at schools in Kuwait and Texas, and do so on a tight budget?

Groupware immediately came to mind, and Lotus Development Corp.'s Notes was the first product the educational training company considered.

But Senior Vice President Michael Ventre soon learned that a Notes installation was going to cost $50,000 to $100,000, more than his company could afford.

So Ventre looked elsewhere, and his search eventually led him to a little-known Canadian company, SoftArc, Inc.'s FirstClass had all the conferencing, chat, database linkage and document storage capabilities that his company wanted. The software would work in his Macintosh environment. And most importantly, the FirstClass system would cost under $3,000 to install, Ventre said.

SoftArc is one of the dozens of companies that often get lost in the shadows of major groupware vendors such as Lotus, Microsoft Corp. and Novell, Inc. Their products may not do everything that Notes does, but many customers don't care.

In fact, only a handful of vendors — such as Oracle Corp., the TeamWARE Division of Fujitsu, Inc. and Hewlett-Packard Co. — choose to take on the Big Three with full-feature products. Many more line up in the other camp, offering focused products for specific tasks.

"They need to be able to do something different or better than the other vendors do," said David Coleman, a principal at San Francisco-based Collaborative Strategies.

Coleman and many other industry analysts think the limited-feature approach is more likely to succeed in the increasingly congested marketplace, especially if the products work with existing tools.

"I think the industry is

See **Groupware,** *page 48*

Printer presses forward with Java application

By John Cox
Chicago

Printing giant R.R. Donnelley & Sons Co. is turning to Java and the World-Wide Web to create a two-way digital publishing system for multimedia documents.

By using these technologies, the company, based here, hopes to let its business clients quickly update and distribute vast amounts of information, including parts catalogs and technical documents.

In the past, Donnelley's corporate clients would update the information, but publish and distribute it on paper or CD-ROM.

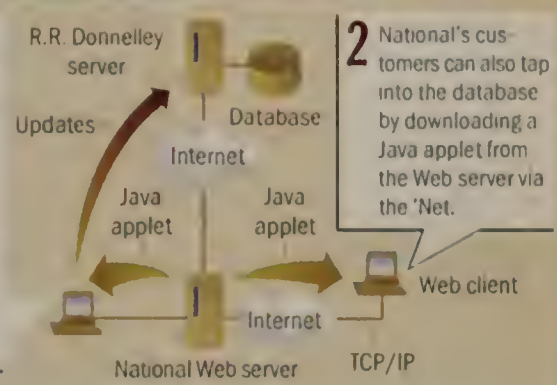
However, these clients wanted to be able to target information more specifically to subgroups of their customers and give them access to the most current information possible, said Jeanne Logozzo, Coris' manager of strategic marketing. "We had to change the overall communications model," she said.

Coris' existing publishing system, called PowerBase, consists of sophisticated C++ server applications that work with Oracle Corp.'s Oracle7 database, which

See **Donnelley,** *page 44*

R.R. Donnelley's Java-enabled, two-way publishing system

1 The system lets R.R. Donnelley run marketing databases for customers such as National Semiconductor, which can give its employees access by downloading a Java applet from a Web server on the company's TCP/IP network. Employees can then update the database.



2 National's customers can also tap into the database by downloading a Java applet from the Web server via the 'Net.

IBM software chief reflects on state of industry

Claims the future is bright for OS/2 Warp and Lotus Notes in the groupware fold.

Q&A

John W. Thompson, the general manager of IBM's Personal Software Division, oversees some of the most powerful tools Big Blue possesses. He has responsibility for OS/2 Warp, LAN Server, PC-DOS, Lotus Notes, cc:Mail, TCP/IP programs and object-oriented technologies. Paulina Borsook, a freelance writer for *Network World*, recently spoke with Thompson about the state of the network industry and the future of IBM's software business.

What do you think are the most important issues facing network managers?

Cryptography and security are on the top of the list. Directory capability is also important, so people know where they are at any time. If they don't have this, how can they manage in a distributed heterogeneous environment?

IBM's *Thompson says cryptography and security are top on net managers' minds.*

Sounds like a typical IBM view of the world: concerned with the management and control of information. But what about the conventional wisdom that lack of bandwidth is the single biggest problem on today's networks?

The bandwidth challenge is less pressing; being able to manage the bandwidth is more critical, as the set of options will grow radically. The cost of managing the plethora of machines is staggering.

Still sounds like a greater concern with management than growth, decentralization and downsizing, which are very much on the minds of network managers these days. How do you see the

See **IBM,** *page 48*

SHARED LOGIC

Marc Myers

Keeping your Internet-based applications safe

The proliferation of Internet sites and servers across America in the last six months has attracted both wholesome and wayward individuals to the electronic forums. Keeping the 'Net safe for the businesses, families and individuals who simply want to realize financial or educational goals across the 'Net should be a high priority for anyone who takes on the task of developing World-Wide Web sites.

In the realm of Internet security, most of the media focuses on Web content and the threat of uncontrolled publishing. This is a serious issue.

But beyond content, there are other security issues that should be recognized now and handled while the Internet is still relatively safe from highway banditry.

To provide a safe site, you need to select and implement the right networking architecture for your requirements. You also need to stay completely in tune with the daily evolution of Internet technologies. Otherwise, you could get fooled by marketing and media hype. For example, Sun Microsystems, Inc.'s Java is being promoted as a cure-all to the Internet's woes and, lo and behold, it even handles Internet security.

A little research will show you that a Java applet is not the appropriate place to centralize your Internet security strategy. Java applets certainly make the 'Net workstation more robust and graphically responsive. And the Java browser, HotJava, can easily be configured to operate effectively within an existing security firewall strategy. But Java is not an Internet security tool.

At the architectural level, Internet security in the majority of sites I've researched is implemented using a proxy server approach. This architecture positions the Web server between the Internet itself and a second proxy server, which prevents any traffic from passing from the Web server onto the corporate network. This proxy server approach works but has distinct disadvantages.

A colleague of mine who works for a major computer manufacturer told me that he has to enter two URLs in order to access the corporate Web server: one for the proxy server and one for the actual Internet server. If he types everything in successfully, then the proxy server will intercept all his Web requests and process them via an application program that decides how to access the Web server.

An example of a well-designed proxy server is NEC America, Inc.'s turnkey PrivateNet product, which combines software and hardware into an efficient proxy-based firewall solution. The PrivateNet system uses two different proxy technologies. The company implements a circuit-level proxy for internal users and an application-level proxy for external users. Circuit-level is a generalized mechanism for verifying IP connections, based on the SOCKS protocol, which is maintained by NEC.

The application-level proxy actually implements a separate application program for each Internet service requested by the user. NEC's white paper "Connecting Safely to the Internet" can be obtained by calling (800) 668-4869.

And finally, don't forget that the simplest way to protect your network is to isolate the Internet subnet from the corporate backbone. In other words, don't connect the Internet to your in-house data.

Myers is president of Client/Server Connection, Ltd., a Cambridge, Mass.-based firm specializing in client/server software solutions. He can be reached at (800) 622-1108, Ext. 522, or via CompuServe at 71332,1726.

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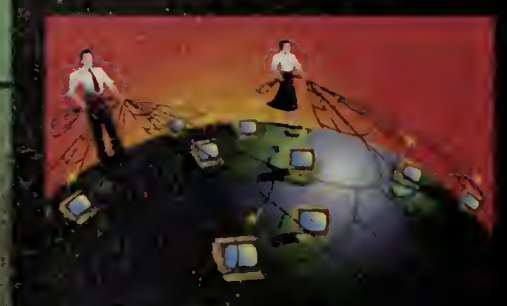

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SAP, Baan reach for the 'Net

SAP joins with Microsoft to blend client/server and Web tools.

By Barb Cole

Client/server applications heavyweight SAP AG and up-and-coming rival Baan Co. last week fleshed out their Internet plans by teaming up with companies that already provide Web tools.

SAP applications will support Microsoft Corp.'s Internet Explorer browser and Internet Information Server, taking advantage of the security and firewall features in those products, according to SAP officials.

SAP will also work with Microsoft and the Open Applications Group, a vendor consortium, to develop the business application program interface (BAPI). The specification will define how client/server applications work over the Internet, according to Paul Wahl, chief executive officer of SAP America, Inc.

SAP, which owns about one-third of the $3 billion packaged client/server applications market, will use BAPI to hook its applications to Microsoft's Internet tools. But details were sketchy on how the products will work together.

"It's a good move" for Microsoft and SAP, said Eric Keller, a vice president at market research firm Gartner Group, Inc. in Stamford, Conn. "It gives Microsoft one of the most significant vendors to hang its tool set on. For SAP, it aligns them with a top enterprise software vendor."

POSSIBLE INTERNET-BASED BUSINESS TRANSACTIONS

- Order entry from multimedia product catalogs (availability verification, pricing, customer authorization and order number confirmation)
- Real-time order status tracking
- Business-to-business matching of purchase requests and sales orders

SAP recently licensed Netscape Communications Corp.'s browser as a front end for its Internet-enabled applications.

SAP also earlier this month previewed Internet-enabled versions of its R/3 financial, manufacturing, distribution and human resources applications, scheduled to ship later this year.

Internet-enabling client/server applications will let companies search for suppliers and purchase raw materials via the World-Wide Web, Wahl said. Another popular application will involve employees checking benefits and other human resources information via corporate intranets, he said.

Baan business

SAP rival Baan is Internet-enabling its applications by partnering with Business@Web, a Watertown, Mass., company headed by former SAP chief Klaus Besier.

The companies will build interfaces between Baan's Triton applications and Business@Web's OpenScape component tool set. The two-phase plan will include a version of the OpenScape tool set that will enable Baan customers to build Web interfaces to their applications and the rollout of Triton applications that include OpenScape components.

Business@Web has already struck a similar deal with SAP.

✆SAP: (610) 521-4500; Baan: (415) 462-4949.

Fulcrum looks to ride Web wave with Surfboard search software

By Barb Cole

Ottawa

Fulcrum Technologies, Inc. this week will announce a new version of its information retrieval software for the World-Wide Web as well as a new tool for locating information stored in Microsoft Corp. Exchange Servers.

Surfboard 2.0 is text retrieval software that resides on Web servers and makes documents searchable with Web browsers. The software supports HTML files as well as text, spreadsheets, word processing and Adobe Systems, Inc. PDF files.

Unlike some Web search engines that require the search indexes to be stored on a central server, Surfboard allows indexes to be stored on local servers to reduce net traffic.

Company: Fulcrum Technologies
Based: Ottawa
Founded: 1983
Primary products: Fulcrum SearchServer, an indexing and retrieval search engine; Fulcrum Surfboard, a search engine for the World-Wide Web
1995 revenues: $31 million
Competitors: Excalibur Technologies, Verity
No. of employees: 250

A key feature in Surfboard 2.0 is support for reusable queries, which enables administrators to store predefined queries on the server for public use.

The software is aimed at companies that wish to publish information on the Web but do not require the advanced version control and security features of a specialized document management system.

"Web-enabled text search engines are on the rise due to the popularity of corporate intranets," said Karen Shegda, associate managing analyst at Datapro Information Services Group, a market research firm in Delran, N.J.

Surfboard allows for natural-language searches but also supports more sophisticated Boolean operators, phrase searching and wild cards.

Version 2.0 will be available next month on Windows NT and is integrated with the operating system's administrative tools.

The software will cost $6,250 per server. Unix versions will roll out over the next few months.

Information Exchange

Fulcrum also will roll out Fulcrum Find, a tool for extending Microsoft Exchange's text search capabilities.

While Exchange can search only one folder at a time, Find can search several simultaneously, according to Anne Fitzsimmons, marketing manager for groupware at Fulcrum. In addition, Find allows users to search messages and attachments, whereas Exchange is only able to search attachments.

Find will be available next month on Windows clients and servers. Pricing is $39 per client and $1,495 for the server.

✆Fulcrum: (613) 238-1761.

Donnelley

Continued from page 41

has beta software for storing and manipulating objects. An essential part of PowerBase is an extensive array of client tools for accessing, managing, updating and manipulating the documents.

Donnelley tapped Strategic Technology Resources, a software development company here, to convert PowerBase's tools into Sun Microsystems, Inc.'s Java. The new WebDirect application is a set of Java applets that download into Netscape Communications Corp. Navigator 2.0 Web browsers employed by content creators and users.

"WebDirect won't replace our customers' corporate networks," Logozzo said. "It will augment them. It will let them reach their own customers, who obviously could not be reached through a [private] corporate network."

"WebDirect won't replace our customers' corporate networks. It will augment them," said Logozzo, Coris' manager of strategic marketing.

National Semiconductor Corp. is now testing WebDirect to update its design information databases, which contain drawings, photographs and text (see graphic, page 41).

National will let hundreds of thousands of electronics designers at companies around the world download the WebDirect Java client and use it to sift through these databases to collect the latest information.

WebDirect will be formally announced later this year. Donnelley is talking with its customers now about different pricing and packaging options for what is a brand-new way of doing business. ■

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IBM

Continued from page 41

trade-offs between giving people and departments autonomy and maintaining some kind of order?

Technology creates opportunity for people to work outside the dots, but restricting bandwidth use means restricting access to other PCs. It's important for people to not feel like Big Brother is around in terms of network management and maintenance, but you need to have standards so people don't have to hunt and peck. There has to be social responsibility of how technology can be assimilated.

What does the future hold for Warp and Warp Server?

With Warp's capability to run DOS, Windows and OS/2, it runs more applications than any other operating system. And with its object-oriented design, it's the ideal platform for the future. As proof of concept, OS/2 and LAN Server have increased in 1995 market share from 9% to 15%.

Most people see IBM's acquisition of Notes as strategic to the company's future. But with the rise of intranets and general corporate Internet use, some say Notes is an unnecessarily cumbersome and costly alternative.

Development is under way to further enhance the ways in which Notes already exploits and explores the power of the Internet, channeling it into a manageable and productive business solution for our customers.

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Human-centered interaction is a big issue. How to franchise people who are afraid of computers. How to reach those who have never learned to type. They have no way to interact. Speech and touch technology may be the way to reach them.

San Francisco-based Borsook (loris@well.com) has work appearing in Wired, Newsweek Japan *and an upcoming Seal Press anthology on women and cyberspace.*

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Component tools

Novell's AppWare tools are reborn at start-up company

By John Cox
Salt Lake City

Novell, Inc.'s AppWare development tools are now in the hands of a start-up company that hopes to spark new interest in the technology for building network applications out of software components.

Network Multimedia, Inc., based here, last week said it is beta-testing 14 new AppWare Loadable Modules (ALM), which are ready-to-use functions that can be incorporated in NetWare applications.

The company also sketched out plans to support Internet/Web applications.

In addition, the start-up next month plans to release a set of ALMs that let programmers give users of Apple Computer, Inc. Newton handheld computers access to Windows and Macintosh applications.

The announcements took place at Novell's Brainshare '96 conference.

Novell acquired the AppWare technology about two years ago to create a tool set for building NetWare-based applications. But earlier this month, several former Novell executives bought the AppWare technology and formed a new company. The move was part of Novell's refocusing on its basic networking products.

AppWare components package complex, low-level NetWare APIs and services into relatively easy-to-use, reusable software objects that can be interconnected using AppWare's graphical programming tools. Network Multimedia's new ALMs include an improved interface to NetWare Directory Services and a new interface to the NetWare Bindery.

But Network Multimedia plans to remake AppWare as a general tool set for building multiplatform, networked applications, according to Joe Firmage, the company's president and former chief of Novell's Appware group.

The AppWare architecture is being changed to support the creation and connection of other types of components such as OpenDoc parts and OLE Custom Controls. Support for these component types is a first step toward embedding them in Web pages, he added.

Network Multimedia said other Internet directions include making it easier for developers to work with the underlying TCP/IP transport and with various security features.

& Network Multimedia: (801) 261-8232.

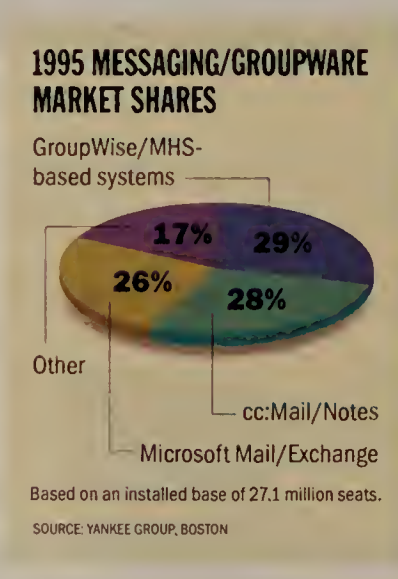
Groupware

Continued from page 41

headed toward a three-platform race between Novell, Microsoft and IBM/Lotus. That doesn't mean that there aren't opportunities for other vendors. But I think the opportunity will be building off of those infrastructures, not proposing alternatives to those infrastructures," said Bob Flanagan, an enterprise applications director at The Yankee Group in Boston.

But there are exceptions to Flanagan's rule. A company such as Oracle, better known for its database products, may be able to gain a foothold by tapping its existing user base. Database customers such as Camp Dresser & McKee, Inc., an environmental engineering consulting firm, admit that Oracle's InterOffice route represents the path of least resistance.

John Erwin, a systems manager at the Cambridge, Mass., consultancy, said other groupware products were considered for document management and workflow, but so far, nothing else "fits all the little niches" like Oracle.



TeamWARE is pushing a modular, open standards strategic approach, according to Mika Enberg, TeamWARE's U.S. marketing director. To save money, customers can pick and choose the groupware components they want, whether calendaring, mail or document management, he said.

One analyst strongly recommended that customers consider multiple groupware solutions instead of one product. "The objective with groupware is not to standardize," said International Data Corp.'s Ian Campbell. "The objective by using groupware is to maximize your company's return on investment. That's a very important distinction."

Large companies such as Chevron Corp. had no choice but to consider alternative products as they waited for Microsoft's long-delayed Exchange Server to hit the marketplace.

Jon Simon, a systems analyst at Chevron Information Technology Co. in Houston, said the company installed over 4,000 Notes seats and another 3,000 of Collabra Share.

Simon said Chevron was looking for a tool to do bulletin-board and conferencing functions where custom application development was not a necessity. Already a huge Microsoft Mail shop, Chevron opted for Collabra on the expectation that it would be tightly integrated with Exchange. "It provided a nice little migration path to Exchange," Simon said.

For the same reason, as well as the desire to work from a familiar interface, various other Microsoft Mail shops went with The MESA Group's Conference+.

"We didn't really buy it with the intention of keeping it for a long time," said Don Davidson, a senior developer at the Ontario-based London Life Insurance Co. "We got it because it filled a need that we had — sharing information between people — very well."

But Ben Shelton, MESA's marketing director, insisted that Conference+ is not a short-lived solution. Exchange rollouts will take years, he said. n

Read white papers about groupware and find links to groupware sites on Network World Fusion. Select News+ then Client/Server Applications.

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Electronic Commerce

Covering: Tools and Techniques for Interenterprise Networking and Doing Business On-Line

Briefs

■ **Security Dynamics Technologies, Inc.** *has unveiled ACE/Client for Windows NT. This tool is designed for secure access to Windows NT Remote Access Services and for direct logon to Windows NT workstations by means of* **dynamic passwords** *generated by a user's Security Dynamics' SecurID token.*

Security Dynamics: (617) 547-7820.

■ **Cylink Corp.** *has begun shipping the SecureNode line of desktop* **public-key encryption** *and digital signature products. A PC card costs $695, while the software is priced at $199.*

Cylink also introduced a frame relay encryption device, marketed under SecureFrame, that costs $5,900 and is scheduled to ship next month. The company is working on an encryptor for Novell, Inc.'s IPX.

Cylink: (408) 735-5800.

■ **Personal Productivity Tools, Inc.** *announced EtherPage, Unix-based software that supports* **alphanumeric paging from the World-Wide Web,** *electronic mail and network monitoring tools.*

Personal Productivity Tools: (415) 917-7000.

■ **Enigma Logic, Inc.** *this May will ship an IBM AIX version of its SafeWord dynamic-password authentication server for remote access to corporate intranets*

The company also plans to expand its **authentication server** *line to include intranet authorization controls to computer resources.*

Enigma Logic: (510) 827-5707

■ **JetForm Corp.** *last week began shipping a Web-enabled version of its JetForm Filler client. The new release allows users to fill out the* **workflow forms** *and send them back to a Web site. Once there, JetForm's Web Connectivity Pak server software collects the data and sends it to a JetForm Server for processing*

JetForm: (613) 594-3026.

IRS to make electronic tax filing mandatory

By Ellen Messmer
Washington, D.C.

When it comes to taxes, it seems paper is out and electronic filing is in.

Soon, this may no longer even be a choice. In fact, next month, the Internal Revenue Service will notify businesses across the U.S. that they soon will have to file corporate taxes electronically.

Under the Electronic Federal Tax Payment System (EFTPS) program, more than one million companies that pay at least $50,000 each year in taxes will have to enroll and file electronically by next January or face a 10% tax penalty for continuing to use paper.

While corporate financial managers support the government's effort to move from paper tax coupons and checks to electronic forms and payments, certain aspects of the EFTPS are stirring concern.

The Automated Clearinghouse (ACH) funds transfer format as specified by the U.S. Department of the Treasury does not include an electronic acknowledgment, so companies will not have a receipt to prove they paid the government.

"Under the current paper system, a company gets a canceled check and a coupon that says they paid," said Arlene Chapman, standards director at the Treasury Management Association (TMA), a Bethesda, Md.-based organization representing corporate finance professionals.

Indeed, the existing ACH system that companies use to credit bank accounts from desktop ACH software suffers from this lack of an acknowledgment. Banks report back only a single ACH sequence number to indicate a credit of funds.

"It operates under the 'no news is good news' principle," Chapman said, adding that this needs to be changed. While trading partners work out problems with ACH between themselves, corporations are worried that paying the IRS via ACH could mean a lengthy documentation process to resolve disputes over tax payments.

The TMA wants the government to work with the Bankers EDI Council within the National Automated Clearinghouse Association trade group to develop an ACH acknowledgment before the EFTPS program begins.

Companies will have to begin enrolling in EFTPS this year (see graphic), but the Treasury Department has still not released the technical specifications for the ACH tax format.

Ronald Rosenblum, Treasury Department project manager, said the IRS will supply Windows-based software to companies in the future. Banks and software vendors are expected to step in with their own PC and mainframe ACH software for tax payments, he added.

The government has enlisted First Chicago Mercantile Services and NationsBank Corp. to handle the enrollment of millions of taxpaying businesses into the EFTPS program.

First Chicago will enroll businesses in the Northeast and Northwest, and NationsBank will handle the Southeast and Southwest, with California split between the two. About 800 companies involved in a pilot program called TaxLink will also be migrated over to EFTPS.

"Corporate customers will call us with any problems," said First Chicago Vice President Tony Castellano.

The plan has a glitch, experts said. At times, companies do not have the information to calculate exact tax payments until the day they are due, but EFTPS requires companies to make the ACH transfer at least a day in advance. The TMA is trying to convince the government to let corporations use the Federal Reserve System's Fedwire network for funds transfer because payments made into it clear the same day.

The TMA believes the IRS 10% tax penalty for anyone failing to enroll in EFTPS is too harsh and has suggested a penalty of no more than 2% as a more just punishment. ■

The new IRS electronic tax-filing mandate

Companies that made federal tax deposits of more than:

- **$50,000** in 1995 must pay electronically by Jan. 1, 1997.
- **$50,000** in 1996 must pay electronically by Jan. 1, 1998.
- **$20,000** in 1997 must pay electronically by Jan. 1, 1999.

At least four million businesses will have to convert from paper filing to network-based transfer under the Electronic Federal Tax Payment System.

SOURCE: DEPT. OF THE TREASURY, WASHINGTON, D.C.

Apertus to ship Web server for IBM apps

By Ellen Messmer
Eden Prairie, Minn.

Apertus Technologies, Inc. next week plans to ship Web software that lets corporations make their existing IBM applications, including those based on 3270 terminals or APPN, available on the World-Wide Web.

Called Enterprise/Access: Web Edition, this Unix software works with any Web server to capture data from IBM applications and allow it to be read by a standard HTML browser.

The plan is straightforward. The Web Edition software simply replaces the IBM client software with a Web browser acting as a universal client.

The Apertus tool will let companies make fresh use of the huge reservoir of legacy data in their corporate mainframes and minicomputers. This approach also could extend transactional functionality into the Web environment, without having to rerig IBM applications.

Web Edition Web-enables existing IBM applications, whether they be 3270, 5250, Application System/400 or Advanced Peer-to-Peer Networking, said Steve Gimnicher, vice president of marketing at Apertus.

"It lets you map the HTML data on the 3270 screen to forms on the server, then transmits the data via the Web," he said.

Apertus' *Gimnicher says Web Edition can integrate data across applications.*

When the user with an encryption-capable browser sends information to the corporate Web site, Web Edition captures the data and identifies the fields, mapping them to IBM applications on the corporate network.

After operations are performed against the fields, Web Edition can integrate the data across the applications, Gimnicher said.

The Dreyfus Corp., a New York-based mutual funds company, plans to use Apertus' Web Edition to set up an Internet pilot project through which hundreds of institutional investors can place orders via the Web.

The Dreyfus Web application, expected to be ready by midyear, will extend the reach of the firm's current Lion Remote mainframe application used by Dreyfus investors. Sri Gupta, Dreyfus' manager of applications systems, said he hopes the application will provide a rapid and reliable approach for conducting transactions with customers over the Internet.

Apertus Enterprise/Access: Web Edition, which starts at $20,000, will be available for Hewlett-Packard Co.'s HP 9000, Sun Microsystems Inc.'s scalable processor architecture (SPARC) line and IBM's RISC System/6000.

◇Apertus: (800) 310-4624

Microsoft arms ISV troops in rush toward the Internet

By Peggy Watt

Microsoft Corp. typically sails into a new market accompanied by a flotilla, and this month's Internet splash was certainly no exception.

Nearly 100 software vendors declared they will implement ActiveX, Microsoft's OLE extensions crafted specifically to enhance current applications to support client/server-style multimedia on the World-Wide Web.

Rivals were not only acknowledged, but also accommodated. Microsoft cut a deal with nCompass Labs, Inc. to develop the ActiveX plug-in for Netscape Communications Corp.'s Navigator, which will enable Navigator users to view Web pages that use elements of ActiveX. The Navigator Plug-in will be available free for download from Microsoft's Web site.

Microsoft even made peace with America Online, Inc., which will package Microsoft's Explorer as the default browser in future releases of its interface. Netscape's Navigator is a bundled alternative.

Also, Microsoft will nurture, recruit or acquire the technology it currently lacks.

Microsoft's new Web development tools include technology from tools developer Colusa Software, Inc. and middleware designer Aspect Software Engineering, Inc., which were both acquired for their contributions to Microsoft's drive to the 'Net.

Colusa markets Omniware, a C and C++ development tool for building Web page components. Aspect's dbWeb provides real-time access from the Explorer browser through Web sites to Open Database Connectivity-compliant databases.

Citrix Systems, Inc. is licensing its Intelligent Console Architecture (ICA) client to Microsoft to enhance Explorer 3.0 for Windows 95 and Windows NT with remote and wide-area capabilities. Citrix already has developed WinFrame technology that extends Windows NT's remote and wide-area functionality. Users will be able to run remote server-based Win32 applications through the ICA link over the Internet.

Paul Maritz *says Microsoft can still move nimbly.*

Despite all its talk about marrying Windows and the Web, Microsoft is not abandoning Apple Computer, Inc.'s Macintosh. Microsoft will continue to update its Explorer browser for the Macintosh, and with Macromedia, Inc. will implement ActiveX on the Macintosh. However, Microsoft officials were noncommittal about Unix support, instead emphasizing that Windows NT runs on diverse, even non-Intel Corp. platforms.

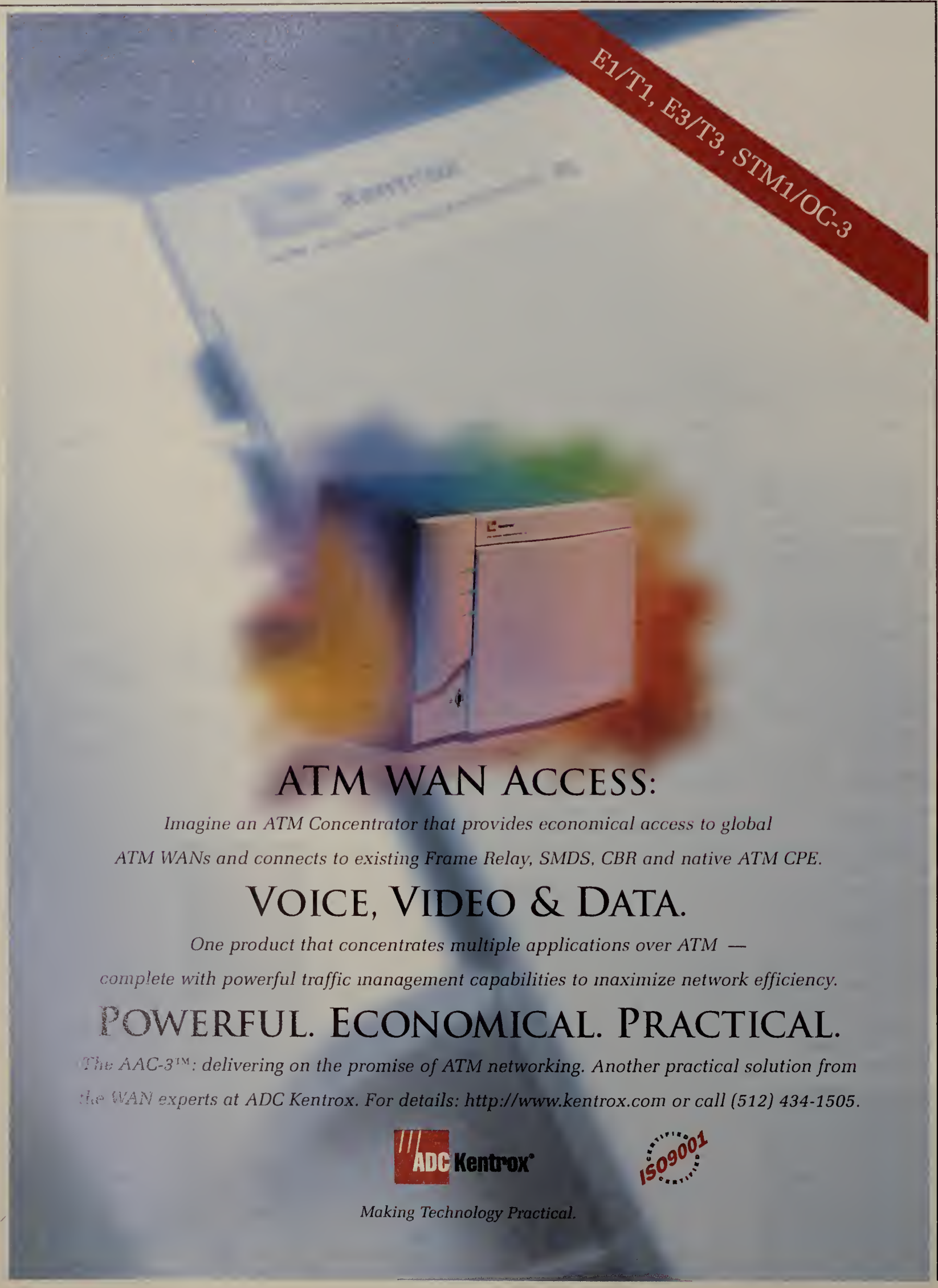
Microsoft also is working with Silicon Graphics, Inc. to put ActiveX on SGI's multimedia platform, Moving Worlds.

Microsoft can use the extra sails. Although admittedly late to recognize the importance of the Internet and the Web, the Redmond, Wash.-based software giant can still move nimbly and underwent "a major reset" and reorganization, said Paul Maritz, Microsoft's group vice president of the platforms group.

Bill Gates, Microsoft's chairman and chief executive officer, was more blunt: "Everything Microsoft is doing now is tied in with the Internet," especially programming tools.

Microsoft is neither daunted nor unused to being the challenger, although the industry tends to not remember the company in that role. Microsoft Word, however, was once a newbie to the dominant WordPerfect, and Excel was a weak rival to Lotus Development Corp.'s 1-2-3. Microsoft studies the pioneers' errors and applies improvements to its late entries.

"We get up every morning and think about browser share," Gates told attendees of a recent Professional Developer Conference. n



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Is there a wireless data service unit/channel service unit (DSU/CSU) that supports V.35 serial traffic at 2.048M bit/sec?

Mike Mendiburu, via Network World Fusion

You might want to look at Cylink Corp.'s AirLink E-1 microwave radio. Dan Hilberman, director of product management in Cylink's wireless communications group, says the product is used in the U.S. for point-to-point applications and costs the same as the 1.544M bit/sec AirLink T-1 yet carries 30% more traffic.

The AirLink E-1 physical interface is the industry standard G.703. Converting your V.35 signal to G.703 requires a separate DSU/CSU. Black Box Corp., Digital Link Corp. and Larscom, Inc. and RAD Data Communications Inc. make such converters.

You can contact Black Box in Pittsburgh at (412) 746-5500; Cylink in Sunnyvale, Calif., at (408) 735-5800; Digital Link in Sunnyvale at (408) 745-6200; Larscom in Santa Clara, Calif., at (408) 988-6600; and RAD in Mahwah, N.J., at (201) 529-1100.

Follow-up

Bob Pratt, product manager for Novell, Inc.'s LANalyzer, suggests that a user seeking aid in configuring a NetWare Management System 2.0 with a multisegment LANalyzer Agent (*NW*, Feb. 26, page 33) attach one server to all managed LAN segments. Because multisegment LANalyzer Agent is licensed to monitor all the segments a server is attached to, the user would remain within the single-server license agreement for the NetWare run-time provided with the LANalyzer product.

The user was considering installing a server on each segment, which requires multiple NetWare run-times. If the user wants to stay that course, Pratt agrees, but advises that buying a five-user version of ManageWise is the least expensive option. A five-user copy of ManageWise comes with a five-user version of NetWare for $1,695. A multisegment LANalyzer Agent with one NetWare run-time costs $2,495.

How to find the right technology to meet multimedia requirements

By Bob Roman

Multimedia applications that integrate voice, video and data are great for allowing collaborative work, but they require new LAN technology and PC upgrades. How extensive and costly network changes are depends on the technology choice.

The two fundamental network requirements for handling multimedia applications are adequate bandwidth and the ability to support real-time communications in the form of predictable, timely data delivery. Because high bandwidth is readily available with most LANs, the latter requirement presents the bigger challenge for a multimedia network.

Video determines bandwidth needs, which can range from 128K bit/sec for desktop videoconferencing to 6M bit/sec for high-resolution, full-motion applications such as video playback or medical imaging. While real-time communications also is important for full-motion video, voice primarily imposes that requirement.

Network approaches

Real-time communications can essentially be provided in two ways. The first way is to adopt the traditional phone company philosophy of isochronous communications. Isochronous networks provide a fixed amount of bandwidth via a dedicated circuit-switched connection. Both Asynchronous Transfer Mode and isochronous Ethernet take this approach.

Despite the word "asynchronous" appearing in its name, ATM can be made isochronous using the constant bit rate class of service. In contrast, the isochronous portion of isoEthernet comes from laying ISDN technology on top of the LAN.

The unfortunate aspect of any isochronous protocol is high cost since it means establishing dedicated end-to-end circuits and buying the corresponding network devices. An isoEthernet network interface card (NIC) alone costs $365, for instance.

The second method of providing real-time communications is prioritized traffic flows. While not truly isochronous in the strictest sense of the word, priority protocols can achieve equivalent quality of service at a fraction of the price. They let LAN switches provide real-time service by giving maximum priority to designated packets.

The IEEE's 100VG-AnyLAN and the 3Com Corp.-developed Priority Access Control Enabled (PACE) protocols use priority schemes.

ATM is often considered the obvious choice for multimedia networking. Conceived for handling voice, video and data communications in the backbone, it will ultimately fulfill that role. But two hurdles — standards and price — stand in its way of providing multimedia connectivity to the desktop.

On the standards issue, the ATM Forum is only now beginning to address isochronous support. On pricing, ATM faces a chicken-and-egg dilemma. Until the technology becomes widely used, low volumes will keep prices high. But volumes may not increase substantially until prices drop considerably. Most experts expect to see ATM first in the low-volume backbone and then at the high-volume desktop as price/performance improves.

IsoEthernet was pioneered at National Semiconductor Corp. and is supported by myriad other vendors. It is a hybrid solution that combines 96 ISDN Basic Rate Interface 64K bit/sec channels (for a total of 6.144M bit/sec) and a 10M bit/sec Ethernet link on the same desktop connection. This makes it compatible with both WANs and LANs. However, isoEthernet requires new switching hubs and NICs, as well as extension of the ISDN infrastructure to the wiring closet.

A handful of vendors have announced support for isoEthernet, but no company has installed it yet.

100VG-AnyLAN employs a scheme called Demand Priority Access to achieve real-time communications. Like the isochronous protocols, it requires new NICs and hubs. It also requires special internetworking equipment to interface with other LANs, including Ethernet.

Vendors are aggressively pricing 100VG-AnyLAN products, which have been shipping for more than a year.

PACE is an enhancement to switched 10M/100M bit/sec Ethernet. It delivers real-time quality of service for multimedia traffic by offering a priority scheme for Ethernet and by managing network access in a way that virtually eliminates link contention. Although 3Com-developed, the PACE technology can be added to any vendor's LAN switch as long as that device is capable of providing interactive access. Importantly, the technology can be implemented at the desktop by adding a new software driver to existing NICs, making it a cost-effective approach to multimedia networking.

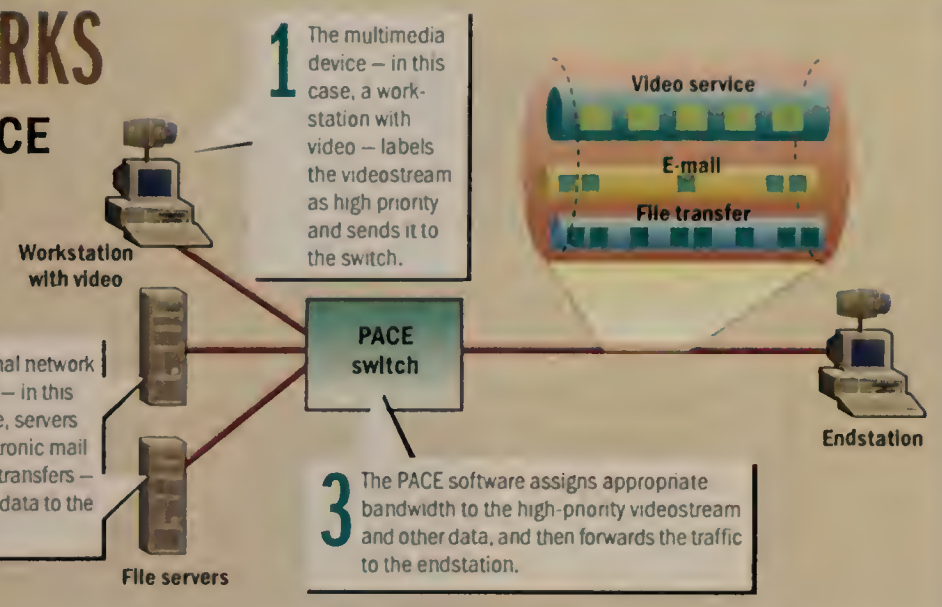
With such diverse options, network managers have to carefully weigh the short- and long-term advantages of each technology.

Roman is product manager of business development at 3Com, a networking equipment provider in Santa Clara, Calif. He can be reached by phone at (408) 764-5237 or via the Internet at bob_roman@3mail.3com.com.

HOW IT WORKS

Setting the PACE for multimedia

The Priority Access Control Enabled (PACE) protocol for Ethernet uses a priority scheme and interactive network access to deliver real-time quality of service for multimedia traffic.



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Let *Network World* provide a quick primer on an important or emerging technology. If you have an idea for Technology Update, contact Beth Schultz by phone at (312) 283-0213 or via the Internet at bschultz@nww.com.

Download specifications for moving multimedia data across a LAN. Select NetRef, Technology Resources then LANs/NOSes.

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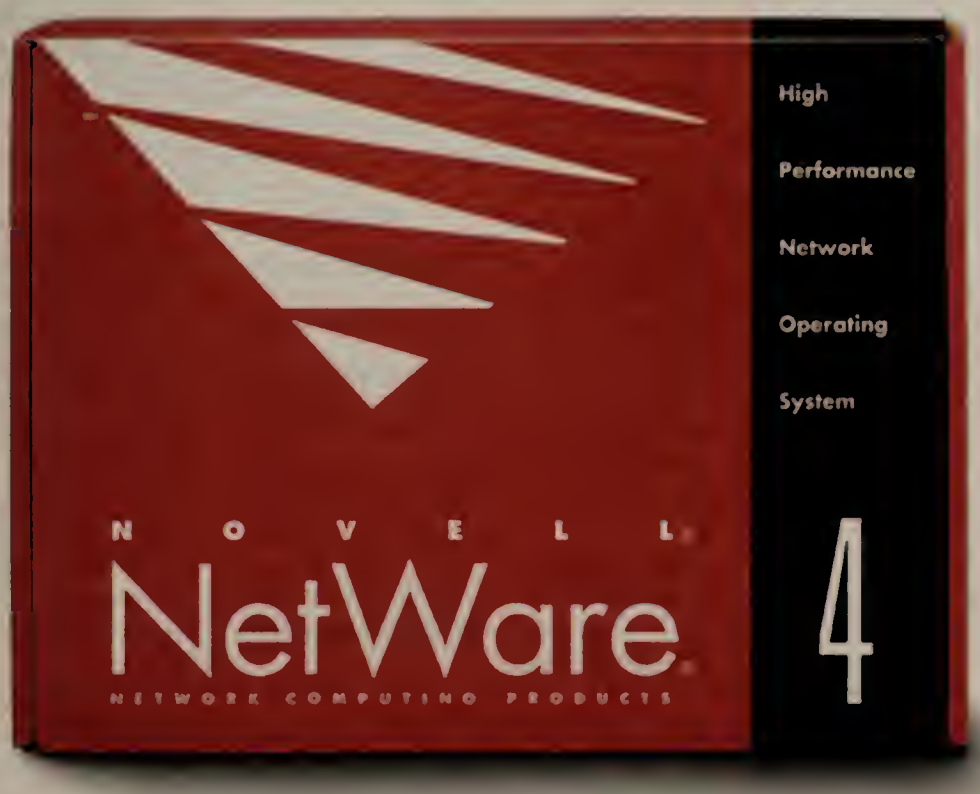
► { NetWare 4 with NDS. }



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EDITORIAL INSIGHTS

Novell returns to its roots

The new plan of attack Novell, Inc. laid out at its annual BrainShare conference last week has the company moving in the right direction on a number of fronts and, as executives repeatedly pointed out, playing to its strengths.

As the company was urged to do in this space just a few weeks ago (*NW*, Feb. 12, page 36), it is getting into the intranet business whole hog, while also providing customers with a comprehensive tool set to help them get the most out of the Internet.

But the company isn't out of the woods yet. It has spent much of the last year confusing customers with strategy shifts and will have to deliver in spades on this latest plan 'lest it lose face altogether.

The good news is Novell seems to recognize this. Executives freely admit the mistakes of the past and now pledge allegiance to their networking roots.

"We are absolutely focused at this point on networking," said CEO Bob Frankenberg. "We're back . . . and we're aggressively going forward."

"It's almost night and day, this year vs. last year," agreed Novell Chief Scientist Drew Major. "Last year, we were spread too thin on some bad bets."

Indeed, those bad bets (such as SuperNOS and AppWare) have cost Novell in the credibility department. Now, you'll need to make the company prove it can deliver on this latest plan because this Internet/intranet space is too important an opportunity to put up with even a near miss.

Key to the plan is last week's announcement that Novell is licensing Sun Microsystems, Inc.'s Java to run on NetWare servers, enabling you to more easily build Web applications for internal and external use.

Novell also struck a deal with Open Market for its SecureLink product. In short, SecureLink will enable not only secure electronic commerce on the Internet, but also a variety of internal transactions on corporate intranets.

"Open Market in the Internet is called electronic commerce," said Steve Markman, executive vice president and general manager of the Novell Products Group. "Open Market in the intranet is called accounting."

Other crucial parts of the company's plan include the Net2000 APIs. Net2000 promises to let you create applications, using any number of popular languages, that take advantage of NetWare services — most notably, the NetWare Directory Services (NDS).

NDS will essentially be the glue connecting distributed applications on corporate intranets, many of which may be built using Java. Besides locating the various parts of such applications, NDS provides the security and authorization services required.

It will do much the same for Internet applications, while also helping you organize information to be presented on Web pages — even to the point where Web servers can be extended to recognize NDS addresses instead of URLs.

Novell also has ambitious plans to break its services away from the NetWare core, enabling them to run on any number of platforms. That will enable you to choose the platform best suited to the application at hand — yes, even NT — and have it all tied together via NetWare and NDS.

It was good to hear Novell lay out such an open, comprehensive strategy that plays to the strengths of NetWare as a NOS and NDS as a directory.

But it will be far better if Novell can deliver.

Asked what he would say to a customer who expressed doubt that Novell will come through as promised, Markman responded: "We have the money, we have the people, we have the focus, and we are going to deliver. Period. If we don't, that customer will never talk to me again."

Right on.

Paul Desmond, features editor pdesmond@nww.com

THE BLUE VIEW

CiscoBlue sets the standard for the next generation of IBM networking

Anura Gurugé

With CiscoBlue, Cisco Systems, Inc. opens the next chapter of multiprotocol LAN/WAN internetworking within the IBM community. CiscoBlue comprises a minimum of 30 separate product or feature offerings that span the gamut of contemporary networking technology from parallel network consolidation to ATM, as well as from LAN switching to NetView/390-compliant network management.

CiscoBlue will invariably be compared with the Switched Virtual Networking (SVN) framework IBM unveiled last August. However, two major differences exist between the products. First, SVN sets out to migrate today's router-based networks into switched ones. CiscoBlue addresses both routed and switched networks, as well as the hybrid networks that employ both technologies side by side.

The other difference has to do with availability. IBM has already stated that SVN features will not be available till the latter part of this year. The 2220 Model 200 Advanced Router, previewed with SVN last August, is now slated to be available in 1997.

Some CiscoBlue offerings, such as the TN3270 Server, LAN frame relay access devices (LFRAD) and CiscoWorks Blue network management facilities, are either already available or due to be available by next month. Many other offerings are due to hit the market by the fall.

CiscoBlue is an intriguing amalgam of glitz and pragmatism, with some of the most compelling components falling into the latter category.

CiscoBlue is an intriguing amalgam of glitz and pragmatism, with some of the most compelling components falling into the latter category. The offerings likely to get the most press are those involving Asynchronous Transfer Mode, LAN switching and High Performance Routing (HPR) across mainframe channels. But, over the next 18 months, it will be commonplace offerings such as the TN3270 Server, LFRADs and Data Link Switching (DLSw) Lite that will be most in demand.

The channel-attached TN3270 Server in particular could be a major winner. Many enterprises have standardized on tn3270, or tn3270-enchanced, as the means by which the majority of PCs and workstations now access SNA applications. Two driving forces are behind this trend: the relatively low cost of tn3270 client software and the desire to migrate toward TCP/IP-centric backbones.

Consequently, there has been a growing demand for channel-attached TN3270 Servers that off-load the need for TCP/IP and tn3270-related processing within the mainframe. TCP/IP software for mainframes is expensive and consumes mainframe storage and processor resources. Eliminating the need for TCP/IP on mainframes while still supporting tn3270 can result in considerable cost savings.

Even IBM has been trying, albeit not with resounding success, to address this demand with an RS/6000-based client-access product that used software from Computer Network Technology Corp. The problem is that this solution is not an integral part of IBM's mainline channel-attached gateway offerings, which still revolve around 3745 and 3746 front-end processors and 3172 controllers — none of which as yet has a TN3270 Server.

Cisco's offering is akin to having an integrated TN3270 Server within a 3172. Though not explicitly spelled out in Cisco's announcement, CiscoBlue early next year will extend this channel-attached server notion to also embrace a File Transfer Protocol (FTP) server. With both tn3270 and FTP processing now being done on a channel-attached bridge/router, there will be no need for any TCP/IP-related software on the mainframe.

DLSw Lite makes Cisco's DLSw+ even more competitive against RFC 1490-based solutions for transporting SNA/Advanced Peer-to-Peer Networking traffic. The 40-byte TCP and IP headers used by TCP/IP encapsulation schemes such as DLSw+ significantly increased their overhead compared with RFC 1490 schemes, which use very small headers. By eliminating the need for the 40-byte TCP/IP header but maintaining all the other attributes of DLSw, such as dynamic location of remote destinations and dynamic alternate routing, DLSw Lite provides users with the strengths of DLSw with the minimal overhead previously associated with RFC 1490.

At present, however, DLSw Lite is Cisco-specific. But this might not be a major impediment. DLSw+ employs a Cisco-specific encapsulation scheme — and that has not stopped it from becoming one of the most widely used encapsulation schemes for SNA traffic.

For the most part, CiscoBlue provides users with a variety of solutions from which to choose. As a counterpoint to DLSw Lite, Cisco offers 16 or so RFC 1490-based FRADs, including the aggressively priced LFRADs, which come bundled with all the necessary software.

Despite its thoroughness, CiscoBlue does have some holes. At present, it does not address 25M bit/sec ATM, even though the recent announcements by IBM and Bay Networks, Inc. have positioned it as a potential challenger to LAN switching.

And CiscoBlue's SNA Session Switching component requires APPN software on the mainframe, even though traditional SNA (as opposed to APPN) is used in the network.

On the whole, though, CiscoBlue is perceptive, cohesive and credible, addressing the IBM community's demands for network consolidation, high performance and switching. In time, CiscoBlue is likely to be seen as a standard for the facilities and technologies required for next-generation IBM networking.

Gurugé is an independent consultant specializing in internetworking and IBM network architectures. He can be reached at (603) 878-1303 or via the Internet at agu ruge@mcimail.com.

REALITY CHECK

CPE costs may dull ATM integrated access appeal

Thomas Nolle

Earlier this month, Siemens Stromberg-Carlson and Newbridge Networks, Inc. announced an alliance to develop a new generation of ATM-based central office products that will help today's big telephone switches migrate to a position in an ATM-based carrier network.

This strategy is interesting because we don't do multimedia on central office switches; we do plain old telephony. The announcement shows that vendors which have a strong relationship with carriers think the combination of regulatory trends and market requirements we're experiencing now will drive users toward ...voice! Why would they think this?

Competition makes things cheap. Cheap service means lower revenue unless you can add new customers. There are two places where this could happen.

The most addressable market, in a sales sense, is the big companies. Estimates on the number of large network service consumers vary from about 20,000 to more than 40,000. For these big users, carrier strategy is obvious — run a big, fat digital trunk to the site to maximize economy of scale and create a lot of excess bandwidth. New services can fit handily onto the pipe at no additional cost, so no other carrier can match the first carrier's rates.

This is what Siemens and Newbridge know and plan to exploit. Since most of the traffic going to those 20,000 to 40,000 large sites is voice, that means integration of voice handling and switching with Asynchronous Transfer Mode is critical, or ATM won't be used for that big, fat pipe.

The name of the game is ATM integrated access. If Siemens and Newbridge are successful, ATM integrated access could add at least 20,000 sites to ATM networks — the sites with the most employees and the greatest demand for the multimedia collaborative applications, which are supposed to be the real value of ATM. Integrated access could be the thing that deploys ATM for multimedia to exploit.

Then again, maybe not. Get enough Lilliputians together and you can tie a giant to the ground. The Lilliputians of the carrier service market are the small sites.

The market niche with the largest population is the branch office or small business, where literally millions of locations get by on a half-dozen dial-up trunks and maybe a 56K bit/sec data line. If deregulation makes regional Bell operating company-owned copper loop available wholesale to competitors, the addition of High-speed Digital Subscriber Loop (HDSL) technology to that copper makes it a T-1 line.

If T-1 access lines cost $450 per month instead of the $1,100 or so per month per end they cost today, there are 900,000 sites that could convert from multiple analog voice lines and digital data lines to T-1. That's a lot of sites and a lot of customer premises equipment (CPE) at the terminations.

Here's the rub: Can any vendor, even Siemens and Newbridge, get the price of T-1 ATM CPE down to the levels where those 900,000 sites would accept ATM, and get carrier ATM delivery down to the level where it could meet a $450-per-month price point?

Our research shows that users don't want to pay more than about 12 times the monthly service cost for CPE. That would put T-1 ATM CPE at $5,400, about one-quarter of the going rate for a Newbridge 36150 switch. Even for firms bullish on T-1 ATM, that pricing is a serious challenge.

If we can't get T-1 ATM at the right price, what's the answer? Good old standard time-division multiplexed T-1. It can certainly be delivered to the user at the right price. And if it is delivered instead of ATM, we'll reinvest on a massive scale in time-division multiplexing (TDM). That will hold back large-scale ATM applications because, in most companies, branches outnumber headquarters locations by about 20-to-1. Having so many key sites on TDM will limit the scope of ATM projects, devaluing ATM technology.

The challenge for the Siemens/Newbridge alliance is to step beyond the fat-pipe theory and address the small sites whose numerical dominance makes them the key to company connectivity plans.

Dry copper, the loop plant that RBOCs will have to wholesale in order to be able to compete in the interexchange market, is the wild card of telecommunications in the 1990s. It has to be wholesaled below its current retail analog voice rates, which are already low.

If it can be exploited through HDSL, it will explode opportunity at the very place in the market where there is the greatest concentration of sites, and the greatest problem with effective ATM delivery.

As these sites go, so goes the industry — to ATM or not.

Nolle is president of CIMI Corp., a technology assessment firm in Voorhees, N.J. He can be reached at (609) 753-0004 or via the Internet at tnolle@ix.netcom.com.

MESSAGE QUEUE

POTS shot

Regarding your article "Universal service: It's not just for POTS anymore" (Feb. 12, page 8):

I'd like to point out to Congress and the Federal Communications Commission that the "po" in POTS stands for plain old and not performance-oriented.

I agree that everyone should have at least a minimum level of telephone service. If you want touch-tone service or three-way calling or call waiting, well, those are enhancements, and you'll have to pay for them. The same goes for Internet access: No public organization is going to be detrimentally affected because it can't get on the Web.

It is ironic that in reverse, POTS reads "STOP" — as in stop these outrageous policies.

Tony Podrasky
Network specialist
Hewlett-Packard Co.'s Convex
Technology Center
San Diego

Letter-perfect

Mark Gibbs' open letter to Novell, Inc. President and CEO Bob Frankenberg (Feb. 12, page 74) was nothing short of masterful. Gibbs captured the essence of all the major problems plaguing the networking giant today — and I go on record as a die-hard Novell loyalist.

For the sake of Novell and the entire computing industry, I hope Frankenberg pays as much attention to Gibbs' open letter as my 3-year-old does to *Barney and Friends*.

Alan Walker
Manager, network computing services
Institute of Real Estate Management
Chicago

Kudos to Mark Gibbs on his open letter to Bob Frankenberg. Sometimes I wonder if the mother ship (Novell) is going to invade the market or crash-land and leave the aliens (Novell employees) to integrate with the rest of the Internet population.

Time will tell, but Bob's probably either blowing his nose with Gibbs' article or playing darts with it. Or maybe he took it to heart. No, don't scare me like that.

Mike Chase
Senior network engineer
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NetworkWorld
TECHNICAL SEMINARS

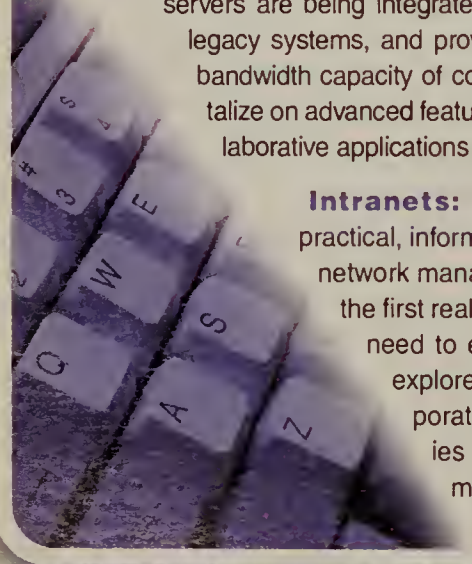
Intranets:
TECHNOLOGIES, TOOLS & STRATEGIES

MAXIMIZE YOUR CORPORATE INFORMATION RESOURCES

What do DHL, Northern Telecom, and Ford have in common? The answer is Intranets. They are among the scores of companies of all sizes who have discovered the potential for an Intranet—an internal management information system based on Internet technologies. Intranets change the way we think about information access and distribution as well as transform network infrastructures.

According to International Data Corporation (IDC), Intranets are growing faster than the Internet itself. The number of Intranet Web servers now comprise 55% of total internet servers and are expected to nearly triple in size this year to more than 200,000 and to exceed 4.5 million by the year 2000.

While Intranet Web servers today act mainly as document publishing systems, a number of vendors are now rapidly extending their functionality. For example, Web servers are being integrated with databases, linked to mainframes and other legacy systems, and providing workflow services. Combined with the high bandwidth capacity of corporate data networks, your organization can capitalize on advanced features such as real-time audio and video as well as collaborative applications and 3-D data representation.



Intranets: Technologies, Tools & Strategies is a practical, information-packed one-day seminar which offers you, a network manager, business strategist or corporate technologist, the first real opportunity to gain the insight and information you need to effectively leverage Intranet technologies. You will explore the leading and emerging tools which bring corporate Intranets to life, analyze current user case studies and learn how to implement a strategy for maximum corporate impact.

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2. **Explore the range of tools available for building, managing and using Intranets**
3. **Ensure that you make the right decisions about security on your Intranet including where and how to implement firewalls**
4. **Explore information publishing on your Intranet at the corporate, group and individual levels**
5. **Analyze the positioning of market leaders such as Microsoft, Netscape, Novell and Sun and how their plans will impact your Intranet solutions**
6. **Explore the future of Intranet technology with Sun's Java and the rendition of data in three dimensions with VRML**
7. **Learn the direction of Intranet-based groupware**
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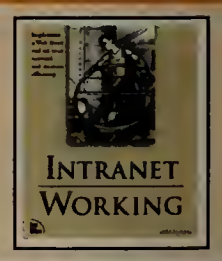

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FEDERAL COMPUTER WEEK

Web server market springs to life

Now that there are plenty of products to choose from, your biggest challenge is keeping pace with the changes.

By Edwin E. Mier

Market conditions are changing faster than you can hyperlink to the next home page. New entries are flooding the market, each professing more whiz-bang features than the last. They come from big players and small, although some of the small are now big. Who can keep up? Wait, here comes Microsoft and what's that? Gates is giving stuff away?

Welcome to the wonderful world of World-Wide Web servers, where as soon as one product is hatched, newer ones come along and vendors retool their existing ones faster than you can say "intranet."

Not to worry. The key is to break down the decision. First, what kind of server do you want? Vendors including Digital Equipment Corp., IBM, Silicon Graphics, Inc. and Sun Microsystems, Inc. offer powerful bundles of Unix-based hardware preloaded with Web server software more often than not obtained from Netscape Communications Corp.

Or you can pick a software-only Web server from any number of players, including Netscape, which sells users a different, more functional version of the package it provides to other vendors. Vendors such as Process Software Corp. and TGV Software, Inc. have packages that run on everything from Novell, Inc.'s NetWare to Digital's OpenVMS.

Still others have single-platform offerings. These include American Internet Corp.'s NetWare-based product, Incognito Software, Inc.'s entry for Banyan Systems, Inc.'s VINES and Quarterdeck Corp.'s line of servers for MacOS, Windows 95, Windows NT and Windows 3.1.

Microsoft Corp., meanwhile, is just entering the market with its Internet Information Server (IIS) 1.0. The company is giving IIS away to licensed Windows NT users, a move that will likely cause other vendors to rethink their pricing.

Microsoft acknowledges the product lacks some of the features and functions other vendors offer in their Windows NT-based Web servers. But a test drive of products we conducted for this Buyer's Guide shows it is relatively easy for someone with Windows NT experience to install and configure.

Ease of use was just one of the areas we examined when we tried out a half-dozen of the 32 Web servers listed in the chart on page 62. That exercise showed that Web servers have some striking similarities in the tools bundled with each package but a number of distinguishing differences in how easy those tools are to use.

But don't overlook other factors such as which version of HTML the Web server supports, whether it provides such features as usage and activity reports or remote administration, or the type of security provided.

You also will want to know if the Web server can provide services other than dishing out HTML pages to Web browsers. The services may include electronic mail, File Transfer Protocol (FTP) support and a Domain Name Server (DNS), and can save you from having to operate separate servers to support these functions.

Start the server search

As you begin to evaluate Web servers, understand that each is built around a HyperText Transfer Protocol (HTTP) daemon, which is the server portion of the client/server protocol used on the Web.

The server's sole job is to deliver HTML files — or Web pages — in response to requests from HTML-compatible Web browsers.

A number of Web servers have added software functions on top of the basic HTTP daemon. These include utilities for creating and authoring Web pages, importing and exporting non-HTML files and data, and a graphical user interface (GUI) for managing files.

In other products, the added value is a server package that's been optimized to deliver maximum performance on a specific hardware platform. But performance is a relative term in this market due to the absence of a standard benchmark (see story, page 64).

That's a far cry from the first Web servers, which were a handful of lean, public-domain programs written in C. Vendors began tweaking those public-domain packages to come up with the first commercial offerings.

Today, more vendors say they are building Web servers from scratch rather than improving on a public-domain program.

Instead of focusing on a Web server's heritage, it's more important to examine what comes with it. Every product we unwrapped came with sample Web pages already installed. By basically replacing those samples with our own Web page files, it was possible in most cases to get the package operating in fairly short order.

A few packages, such as O'Reilly & Associates, Inc.'s WebSite, go well beyond providing canned sample pages. O'Reilly's offering includes an impressive Web page wizard, which lets you readily experiment with different aspects of Web page structure and layout.

How difficult are these packages to install and use? Well, that depends on how familiar you are with the server's underlying operating system. The Web server installer and administrator needs to know about a whole range of server attributes, including memory, data storage structure, file organization and security.

Using a 10-point scale of the skill level required, where a 10 equals a network and systems guru and a zero means a gorilla could handle it, most of the Web servers we looked at fall about in the middle. There are some notable deviations, though.

For example, Microsoft's IIS is among the easiest to

Web servers

Vendor	Product	Type		Operating system	Key features								Other features	Security	APIs and scripting tools				Price
		Software	Hardware and software		HTML versions	Activity tracking	Usage reports	SNMP agent	Remote administration	Authoring/editing tools	GUI-based file management	Non-HTML file import			CGI extensions	JavaScript API	DBMS APIs and interfaces	Other	
American Internet Corp. (800) 425-1112	SiteBuilder 1.0	✔		NetWare	1, 2, 3	✔	✔		✔				NetWare SMP support	Access restrictions	✔			✔	$1,495
Border Network Technologies, Inc. (416) 368-7157	BorderWare Firewall Server 3.1.1	✔		Proprietary	1								Web server is built into vendor's firewall	Via proxy through the firewall					$4,000-$11,000
Digital Equipment Corp. (508) 493-5258	Internet AlphaServer		✔ (1)	Unix	1, 2, 3	✔	✔	✔	✔	✔	✔	✔	News, DNS, Gopher and FTP servers	SSL, access restrictions	✔	✔	✔	✔	$11,995 +
	Web AlphaServer		✔ (1)	Windows NT	1, 2, 3	✔	✔	✔	✔	✔	✔	✔	Gopher and FTP servers	SSL, access restrictions	✔	✔	✔	✔	$9,795 +
Durand Communications Network, Inc. (805) 961-8700	MindWire NT 2.0	✔		Windows NT		✔				✔			E-mail server, conferencing					✔	$2,495 for 10-user license
Frontier Technologies Corp. (414) 241-4555	SuperWeb Server for Windows NT 1.0	✔		Windows NT	1, 2, 3	✔	✔		✔	✔	✔		Local server search engine included	Access restrictions	✔				$795
FTP Software, Inc. (508) 685-4000	Esplanade Professional Web Server 1.2	✔		Windows NT	1, 2, 3	✔	✔					✔	Dynamic document conversion	SSL 2.0, access restrictions	✔		✔		$495; $1,195 for secure edition
	WebServer for Unix 1.1 (with Open Market Web Server 1.1)	✔		Unix	1, 2, 3	✔	✔		✔				Detailed activity reports	SHTTP, SSL 2.0, access restrictions	✔				$1,495; $4,995 for secure edition
GLACI, Inc. (414) 475-6388	SecureServ 2.05	✔		NetWare	1, 2, 3	✔	✔		✔				Search engine, managable via Web browser	SSL, limited access restrictions	✔	✔		✔	$475; $975 for secure version
GNN, Inc. (805) 882-2350	GNNserver (formerly Navisoft, Inc.'s NaviServer)	✔		Windows NT, Unix	1, 2, 3	✔			✔	✔	✔		Search engine, DBMS	SSL 2.0, access restrictions	✔		✔	✔	Free
IBM (919) 254-6262	Internet Connection Server/Secure Server for OS/2 and AIX	✔	✔	OS/2, Unix	1, 2, 3				✔				FTP server, search engine, proxy server	SHTTP, SSL, access restrictions			✔	✔	$449-$2,699 for software. Hardware price varies.
Incognito Software, Inc. (604) 688-4332	WebServer for VINES 1.1	✔		Banyan VINES	1, 2, 3	✔	✔		✔	✔	✔	✔	Search engine, optional FTP, E-mail and DNS servers	Proprietary, access restrictions	✔		✔	✔	$995; $1,495-$2,495 for options
InterCon Systems Corp. (703) 709-5500	InterServer Publisher 1.1	✔		MacOS	1, 2, 3	✔	✔		✔	✔	✔		FTP and Gopher servers	Access restrictions	✔			✔	$495
The Internet Factory, Inc. (510) 426-7763	Commerce Builder Pro 1.5	✔		Windows NT, Windows 95	1, 2, 3	✔			✔				Optional search engine, conferencing	SSL, access restrictions	✔	✔	✔	✔	$995
ISYS/Odyssey Development (303) 689-9998	ISYS Web 1.0	✔		Windows NT	1, 2, 3	✔	✔	✔		✔	✔	✔	E-mail server, search engine, dynamic document conversion	SHTTP, SSL, access restrictions					$50
MDG Computer Services, Inc. (708) 622-0220	Web Server 4D 1.0	✔		MacOS	1, 2, 3	✔	✔						Outbound E-mail, DBMS	Proprietary, access restrictions				✔	$495
Microsoft Corp. (206) 882-8060	**Internet Information Server 1.0**	✔		**Windows NT**	1, 2, 3	✔	(2)	✔	✔		✔	✔	**FTP and proxy servers, optional E-mail and news servers**	**SSL 2.0, access restrictions**	✔	(3)	✔	✔	**Free to Windows NT Server users**
MMB Development Corp. (310) 318-1322	MMB Teamate 4.05	✔		Unix	1, 2, 3	✔	✔		✔	✔	✔	(2)	E-mail gateways, DBMS	Proprietary, access restrictions		✔	✔	✔	$7.50-$25 per simultaneous user
Netscape Communications Corp. (415) 254-1900	**Enterprise Server 2.0**	✔		**Windows NT, Unix**	1, 2, 3	✔	✔	✔	✔	✔	✔	✔	**Optional E-mail, news and proxy servers**	**SSL 3.0, access restrictions**	✔	✔	✔	✔	**$995-$1,495; options $995 each**
	FastTrack Server 2.0	✔		Windows NT, Unix	1, 2, 3	✔	✔		✔	✔	✔	✔	Optional E-mail, news and proxy servers	SSL 3.0, access restrictions	✔	✔	✔	✔	$295-$495; options $995 each
Open Market, Inc. (617) 621-9500	WebServer and Secure WebServer 1.1	✔		Windows NT, Unix	1, 2, 3	✔	✔		✔				Search engine	SHTTP, SSL, access restrictions			✔	✔	Not specified
O'Reilly & Associates, Inc. (707) 829-0515	WebSite 1.1	✔		Windows NT, Windows 95	1, 2, 3	✔	✔		✔	✔	✔		Search engine	Access restrictions	✔	✔		✔	$499
Process Software Corp. (800) 722-7770	Purveyor WebServer family	✔		NetWare, Open VMS, Windows NT, Windows 95	1, 2, 3	✔	✔		✔	✔	✔	✔	Search engine, E-mail and proxy servers	SSL, access restrictions	✔		✔	✔	Not specified
Quarterdeck Corp. (310) 309-3700	WebStar 1.2.4	✔		MacOS	1, 2, 3				✔	✔		(2)	FTP and Gopher servers	SSL, access restrictions				✔	$495; $995 for SSL security
	MacHTTP 2.2	✔		MacOS	1, 2							(2)		Access restrictions				✔	$95
	WebStar for Windows 95/NT 2.0	✔		Windows NT, Windows 95	1, 2, 3						✔		Image mapping	Limited access restrictions	✔			✔	$299
	WebServer 1.0	✔		Windows 3.X	1, 2, 3						✔		Image mapping	Limited access restrictions	✔			✔	Not specified
Silicon Graphics, Inc. (800) 800-7441	**WebForce series**		✔ (1)	**Unix**	1, 2, 3	✔	✔	✔	✔	✔	✔	✔	**E-mail, FTP, news, DNS and Gopher servers, optional proxy servers**	**SSL, access restrictions**	✔	✔	✔	✔	**$9,950-$90,000**
Spry/CompuServe Internet Division (800) 557-9614	SafetyWeb Server 1.1	✔		Windows NT	1, 2, 3	✔			✔	✔	✔	✔	Search engine, proxy server	SSL, access restrictions			✔	✔	$245-$895
Sun Microsystems, Inc. (415) 786-7737	Netra Internet Server 2.0		✔ (4)	Unix	1, 2, 3				✔				E-mail, FTP and DNS servers, optional news server, IPX gateway	Optional SSL, access restrictions	✔		(5)	✔	$5,995-$15,995
TGV Software, Inc. (800) 848-3440	Cheetah Web Server 1.0	✔		Open VMS, Windows NT, Windows 95, Unix	1, 2, 3	✔	(2)		✔				Proxy server	Proprietary, access restrictions	✔	✔		✔	$295-$795
	MultiNet Information Server 1.1	✔		Windows NT	1, 2, 3	✔	(2)		✔				FTP, DNS, syslog and proxy servers	Proprietary, access restrictions	✔	✔		✔	$945

Product names highlighted in color were selected for the Short List.

Chart compiled by Meir Communications

Footnotes:
(1) Uses Netscape Communications Server software.
(2) Functionality is limited.
(3) Supports serving of Java scripts to Java-enabled clients.
(4) Software provided by Netscape or public domain package.
(5) Optional

CGI = Common Gateway Interface
DNS = Domain Name Service
SHTTP = Secure HTTP
SSL = Secure Sockets Layer

install and use, requiring only a Level 4 expertise, as long as the user is proficient with Windows NT Server. If you have to learn Windows NT first, the skill level would be different. We were able to mount the pages maintained on our Web site (http://www.mier.com) on an IIS server and get it up and running in 30 minutes.

We accomplished the same task with two other Windows NT-based products — O'Reilly's WebSite 1.1 and Frontier Technologies Corp.'s SuperWeb Server for Windows NT 1.0 — each in about an hour. However, where Frontier's product requires a Level 5 expertise, O'Reilly's needs a Level 8, in our view. Importing Web pages proved tricky with WebSite 1.1 because the user interfaces for doing this are hardly intuitive.

By comparison, American Internet's SiteBuilder 1.0, which runs on a NetWare 3.1X or 4.1 server as a series of NetWare Loadable Modules, requires Level 5 expertise from a NetWare administrator and a higher number for a non-NetWare administrator. For instance, the user needs to know how to bind TCP/IP to the server's network adapter, which has to be done before the Web server software is installed.

World-Wide Web server packages

NetworkWorld Short LIST

The Short List highlights products Network World *recommends you closely examine when purchasing a World-Wide Web server. The selected products are leading contenders in one of three market niches: a software-only product that runs on a single operating system; a software-only offering that runs across a mix of operating systems; and a bundled package of hardware and software. Other contenders in each market niche may meet your specific needs.*

Microsoft Corp. has clearly expended a fair portion of its considerable resources in developing its **Internet Information Server (IIS) 1.0.** Although IIS doesn't have as many add-on software features as its NT-based competitors, it is well designed, easy to install and use, and offers performance that rivals servers running on high-end Unix workstations. If you're moving to Windows NT, familiarize yourself with IIS. It won't cost you anything to do so, as it will be built into Windows NT 4.0.

With Enterprise Server 2.0, Netscape Communications Corp. has one of the richest set of features and functions on the market. The product offers users flexibility and the broadest range of choices by running on a variety of leading platforms. And with a broad and growing installed base, users can be assured that Netscape will retain a long-term leadership role.

Silicon Graphics, Inc.'s WebForce series eliminates the integration challenge of getting a software-only server to run on your platform of choice. The core Web server software, licensed from Netscape, has been integrated along with other value-added software and optimized for top-notch performance on Silicon Graphics' workstations. Silicon Graphics has exhibited continued technology leadership in the areas of performance, multimedia and graphics integration that are key to the future evolution of Web servers.

Key capabilities

The features offered by Web servers vary as much as their ease of use.

For servers that will host multiple sites — the pages of multiple organizations or departments, for example — you'll find a multilayered system of administrative access especially useful. This is a real advantage for Frontier's product, which supports four levels of administrative access. The person given the highest level of access can tap into all portions of the server and files. Subordinate levels can be set up to limit access to specific files, so different users can access and update their own Web pages, but nobody else's.

The Buyer's Guide chart shows some of the key distinguishing features among products. Here are some key points to keep in mind as you examine these features:

■ HTML version support. Nearly all vendors claim to support HTML. Versions 1.X, 2.X and 3.0, which is the latest version. Picking a Web server supporting all three versions means you will be able to support the widest range of browsers.

■ Activity tracking. Whether for intranet or Internet use, knowing how your Web server is being accessed is a real plus. In an intranet environment, activity tracking helps with departmental chargebacks as well as general traffic management.

■ Usage reports. Some Web servers can track activity but do not offer integral facilities for reporting this data. One set of servers may only export usage statistics and logs into certain third-party spreadsheets or databases. Others can report usage data in various ways, including via automated electronic mail messages.

■ Simple Network Management Protocol agent. If you want to manage a Web server at the enterprise level, make sure it can respond to polls from an SNMP-based console. Otherwise, you will have to rely on the administrator interface provided with all Web servers. Increasingly, a standard Web browser is being used for local and remote administration.

■ Remote administration. Some products rely on the underlying hardware platform and operating system to enable administrators to access and control the Web server. Depending on the platform, a local console may be the only option. For maximum flexibility, though, users should look for products that support management access via different paths. Common access methods include in-band management over the server's main LAN interface and out-of-band via a serial port. It is best if both are supported concurrently so you have a backup path should one fail.

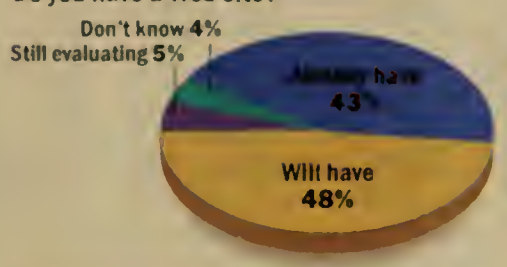
■ Authoring/editing tools. It makes sense for a server to have utilities for creating and editing Web pages. At a minimum the package should provide an editing viewer — a browser emulator that enables administrators to view new or edited Web pages without having to go on-line.

■ GUI-based file management. This is a must for multisite Web servers, where the administrator is constantly adding or moving new or revised Web page files. In some cases, the file management GUI may use the server operating system's integral facilities. But this is usually not oriented to Web page files. Instead, look at the integral interface that some Web server packages offer for manipulating and moving Web pages. Some use intuitive object-oriented displays that clearly show — in flow-

Reader views on Web servers

Based on 100 interviews.

Do you have a Web site?



Web site has been up and running for:

(based on 43 responses)

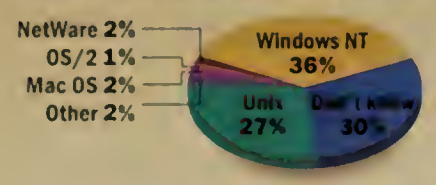
1 to 6 months 44%
7 to 12 months 35%
13 to 30 months 21%

Web site will be up and running in:

(based on 48 responses)

1 to 6 months 50%
7 to 12 months 33%
13 to 24 months 15%
Don't know 2%

Primary Web server operating system



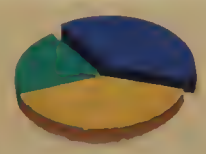
You should buy a:

Bundled package of Web server software and hardware **39%**

"If you have no experience at all, then that's the best choice."

"If you buy from a good company, you will have a more stable platform when you buy a bundled package."

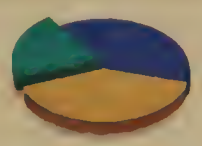
Web server software only **40%**



"You can go with the best of the breed."

"You get total control from an Intranet standpoint, manage the workload and you have a better response to user needs."

Don't know/depends **21%**



"It depends on the size of the company and their level of sophistication. I would recommend small companies to buy bundled packages and larger companies to buy the Web server software only."

Web site content should be developed:

In-house **27%**

"I've had bad luck with external people. If an outsider changes something and an insider changes something else, than you lack overall control."

"I'm totally committed to in-house development. The technology itself is simple enough for your programming staff to handle. Your marketing people can also get involved so you'll have better end product."

By third party **8%**

"Just because you can program doesn't mean you have the artistic skills and the marketing knowledge to do it well."

"You can tap into their experience and knowledge base."

Both in-house and third-party **56%**

"Initially, you should go outside to buy the expertise needed to cut down on research and development and get the site up and running. In the long term, you want to have the expertise in-house because it will be more cost effective to maintain the site internally."

"You can do it internally for something simple like HTML, but you'll have to go outside for programming and database access issues."

Don't know/depends **9%**

"If there's a heavy workload, we'll have to go with outside people. But if we know the material better, we may wind up developing it internally to be cost effective."

chart fashion — the relationship between the pages of a Web site and even display HyperText links and jumps between pages and sites.

■ Non-HTML file import and export. Along with Web page-authoring tools, other useful features of some Web servers are utilities for converting data to and from HTML. In some cases, a Web server can convert certain non-HTML formats, such as data from spreadsheets or word processors, into HTML format without administrator intervention.

The server's other servers

Another important element to consider is whether the Web server has what it takes to obviate the need to implement stand-alone servers for other Internet-related functions. For instance, some Web servers can double as Simple Mail Transfer Protocol-based E-mail, DNS and FTP servers.

You should be aware, though, that running one or more of these other server applications concurrently with the Web server can diminish overall performance. If you want the Web server platform to support more concurrent browsers or shorten lethargic response times, then move all other applications off of it.

If you are looking to do just that, you will likely encounter the term "proxy server" as you examine products. But be careful; proxy server does not mean the same thing to all vendors.

One use of proxy relates to a Web server's capability, usually working in conjunction with the underlying operating system, to transparently forward browser requests or distribute the processing workload to another system. Browser requests could initially be received by a primary Web server, but the Web-page file may actually come from a nearby system. Likewise, a Web server asked to execute a Common Gateway Interface script can instruct another machine to kick off that process.

Some vendors say that this architecture can, if properly tuned, yield a very high-performance multiprocessor Web server cluster. This proxy architecture also could be applied to a cluster of Web-server nodes, working collaboratively as a single logical Web site.

Another, less common use of proxy describes the ability of some servers to host multiple Web sites by concurrently supporting multiple IP address identities. The IP address that is mapped to a domain name such as nww.com is the actual mechanism that distinguishes one Web site from another. While some vendors use proxy to describe this multiple IP address/domain-name support, others apply different terms for the same thing. Microsoft, for example, calls it virtual Web servers.

A final note on Web server features relates to security. Competing security mechanisms — with names such as Secure HTTP (SHTTP) and the Secure Sockets Layer (SSL) — are currently among the most prevalent in both Web browsers and servers.

Some browser vendors have embraced SHTTP. Others, most notably Netscape, have adopted SSL, which appears to be the more predominant security protocol. SSL's wider support may reflect the pervasiveness of Netscape's browser, as well as the fact that Netscape's Web server software is the core of many integrated hardware/software products. There's no consensus yet on which is more effective, however.

SHTTP, SSL and other security protocols are used for user authentication, data protection, encryption and transaction security. For the most part, the invocation of any of these security features is negotiated between a browser and a Web server. This means most browsers can still connect and talk to most servers; they just cannot invoke optional security measures if the server supports a different security protocol.

With a variety of alternatives and more specifications for new security protocols being posted by Internet standards bodies every week, it will be awhile before one is finally adopted and deployed throughout the Web.

In the future

The number of products on the Web server market has roughly doubled over the last year. But many analysts believe the market cannot sustain this rate of growth over the next six months, or even a year, because it is nearing the saturation point.

It is also likely some vendors will not be able to match the type of pricing pressure Microsoft is exerting and will retreat from the market.

But that does not necessarily mean that you will have an easier buying decision if you continue to wait.

On the contrary. With the rate that vendors are adding features and options to their Web servers, determining which ones to put on your short list and conducting a thorough feature comparison is likely to take longer and longer.

Mier is president of Mier Communications, Inc., a network consultancy in Princeton Junction, N.J. He is principal author of the special report "When You Decide to Buy: Analyzing and Selecting Web Servers." Mier can be reached via the Internet at ed@mier.com or by phone at (609) 275-7311.

Visit Network World Fusion, select NetRef then Product Reviews/Buyer's Guides, and you'll find links to information about Silicon Graphics' WebStone, the closest thing to a standard Web server test performance benchmark, plus links to:

- **A white paper on improving HTTP latency**
- **Results of a Web server test on an HP 735 workstation**
- **The WebCompare site, which has comparison charts for software-only Web servers**
- **The WWW-Speed site, which is dedicated to improving Web server performance**

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The difficulty of measuring performance

A key element in selecting a Web server is likely to be how many browsers it can support, but trying to determine this number gets tricky.

This is partly due to the variable and unpredictable nature of traffic on the World-Wide Web. The absence of a standard benchmark for performance and throughput does not help.

The closest thing to a benchmark is a load simulation model and test procedure called Webstone, developed by Silicon Graphics, Inc. But not everyone agrees that Webstone accurately addresses all the parameters that could affect Web server performance.

In evaluating vendor claims, or in creating or running your own tests, be sure to consider the following aspects of Web server processing:

■ Workload. See how the server reacts to a mix of processes invoked by browsers. Those processes can be pure HTML file fetches, script execution, electronic forms processing that uses the Common Gateway Interface (CGI) or something kicked off by a proprietary API.

From a server's point of view, fetching and delivering pure HTML files is relatively easy work, while CGI actions are notoriously demanding. Actions invoked via proprietary APIs fall somewhere in between.

■ File size. Make sure any performance and throughput metric you use specifies a typical size for a Web page file. A page could be just a few thousand bytes, as is the case in a file with mostly ASCII text, or it could easily exceed 100K bytes when you include a high-resolution video frame. Based on traffic studies we've done, 16K bytes is a good number to use for average file size.

■ Browser request rate. Find out how the server responds when browsers request files at various intervals. As a rule of thumb, servers are under a light load when browsers request files once a minute and see their heaviest load when browsers request files every 10 seconds.

■ Transaction rate. Use a metric that incorporates two common definitions of a transaction — connections per second and file requests per second. Connections per second measures how many TCP sessions can be opened per second while the other measures transactions based on the number of file requests that can be serviced per second. Given the nature of the HyperText Transfer Protocol used on the Web, the two are essentially the same because a file request will in most cases equate to a connection.

Also, keep in mind that Web server performance can be affected by hardware issues such as caching and the use of multiprocessor systems.

When seeking performance figures, frame your questions so that vendors cannot fudge the answers. Rather than asking how many concurrent browsers a Web server can support, phrase the question something like this: "How many hits can your Web server process per second, assuming pure-HTML fetches and all 16K-byte file sizes?" Be sure to specify whether you define hit to mean file requests, connections or both.

Then do the math yourself. If you assume a browser request rate of once every 30 seconds, multiply the hits-per-second figure by 30. That's roughly how many concurrent browsers this server can serve.

—Edwin Mier

Ship dates for Web server products

Ship date	Vendor and product
1993	Quarterdeck's MacHTTP 2.2
1/95	Silicon Graphics' Web series
5/95	Sun Microsystem's Netra Internet Server 2.0
6/95	Quarterdeck's WebServer
7/95	Digital's Internet/AlphaServer
	IBM's Internet Connection Server/Secure Server for OS/2 and AIX
9/95	Digital's Web AlphaServer
	InterCon Systems' InterServer Publisher 1.1
	Open Market's WebServer and Secure WebServer 1.1
	Process Software's Purveyor WebServer family
10/95	FTP Software's WebServer for Unix 1.1
11/95	Border Network Technologies' BorderWare Firewall Server 3.1.1
	MDG Computer Services' Web Server 4D 1.0
12/95	American Internet's SiteBuilder 1.0
	Frontier Technologies' SuperWeb Server for Windows NT 1.0
	Quarterdeck's WebStar 1.2.4
	Quarterdeck's WebStar for Windows 95/NT 2.0
	Spry/CompuServe Internet Division's SafetyWeb Server 1.1
1/96	GLACI's SecureServ 2.05
	Incognito Software's WebServer for VINES 1.1
	MMB Development's MMB Teamate 4.05
	O'Reilly & Associates' WebSite 1.1
2/96	Durand Communications Network's MindWire NT 2.0
	FTP Software's Esplanade Professional Web Server 1.2
	GNN, Inc.'s GNNserver
	The Internet Factory's Commerce Builder Pro 1.5
	Microsoft's Internet Information Server 1.0
3/96	ISYS/Odyssey Development's ISYS Web 1.0
	Netscape's Enterprise Server 2.0
	Netscape's FastTrack Server 2.0
	TGV Software's Cheetah Web Server 1.0
4/96	TGV Software's MultiNet Information Server 1.1

Encore for ONcore

A closer look at 3Com's entry in our high-end hub Buyer's Guide Short List turns up a few flaws.

By Kevin Tolly and John Curtis

Looking at the spec sheet of 3Com Corp.'s ONcore Integrated System would be enough for just about anyone to put it on his or her high-end hub shortlist, which is just what *Network World* did in its Feb. 12 Buyer's Guide.

But our hands-on evaluation turned up a few shortcomings in the product 3Com acquired when it bought Chipcom Corp. And we found the hub, called the ONcore Multifunction System in February, a little too pricey.

The hub responded well to port configuration as well as port and module redundancy tests. But its lack of advanced features plus an awkward graphical user interface (GUI) on its network management application left something to be desired.

In the chassis

The core of the ONcore hub is a 10- or 17-slot chassis (we tested the smaller version) that contains two backplanes. One backplane is used for shared-media topologies — in this case, Ethernet, token ring and FDDI. The other is used for switched topologies such as Asynchronous Transfer Mode and an as yet undelivered Ethernet switch. We focused exclusively on shared-media support in our evaluation.

The shared-media backplane can support as many as eight Ethernet, 17 token-ring and eight FDDI segments. Because of the way bandwidth is allocated, it is not possible to configure all 33 segments simultaneously.

The hub supports FDDI but currently has no way to link the FDDI module to the hub's Ethernet users short of implementing an external bridge or router. Further, no Fast Ethernet modules are yet available. Combined, this leaves the network manager no options for fully integrated high-speed links.

The bandwidth channels used by each segment overlap in an illogical way. For example, employing a particular token-ring backplane segment may nullify the use of a particular Ethernet segment. When you employ a different token-ring backplane segment, you may nullify the use of two Ethernet segments, and there's no simple way to determine which specific modules make the best use of backbone segments. A user requiring multiple topologies needs to pull out the ONcore manual and construct an overlay map to be certain that the desired mix of networks is possible.

Network and backplane channel configuration is handled by a management module that occupies a full chassis slot. This module can optionally be outfitted with daughter cards that enable Remote Monitoring (RMON) and other functions and is one of the hub's key redundant components.

The hub we tested had a second, identical management module in the adjacent slot. A single management module can communicate with all Ethernet, token-ring and FDDI modules. A separate and different management module is required to control ATM or LAN switching cards.

We verified the redundant functions as well as the hot-swapping capability of the management module. While the unit was running, we pulled out the primary module. Within a few seconds, the standby unit became active, as indicated by status LEDs on the card.

Shortly thereafter, we reinserted the first card and it went back on-line in standby mode. It did not reassert itself as the primary controller, a prudent approach because it prevents a module experiencing intermittent problems from causing excessive swapping between active and standby controllers.

While redundant management controllers worked fine, 3Com's network management console was a source of misinformation. Regardless of which controller was in charge of the hub at any given time, the network management screen always labeled the module that was active at power-on as the master, even when that module was removed from the slot or operating in standby status.

The power supply is another key area where redundancy is offered, and we found it worked as advertised. All power supplies for the hub are load-balancing, and the controller modules for them work similar to the ones used with the management modules to make sure a backup unit takes over immediately if the primary unit fails. When a power supply comes back on-line, it shares its load with all active units. There is no primary or backup power supply in a load-balancing environment.

Redundancy is available at the network port level, as well, and it also tested out for Ethernet. If a primary port fails for any reason, a backup port immediately becomes active. However, unlike the controller modules, the backup port will return to standby mode if the primary one becomes active again. This means that a preferred network path will be used whenever it is available.

Unfortunately, assigning port redundancy through the network management application is not documented in hard copy or on-line. Using the management application to configure a port is counterintuitive. Even an on-site 3Com engineer had to give up on the graphical network management interface and turn to the unit's command-line interface to perform the configuration.

Topology support

Testing showed port density is not a problem. The hub we evaluated was outfitted

NetResults

Product
ONcore Integrated System

Vendor
3Com Corp.
(800) 638-3266,
(408) 764-5000

Price
$50,835 for unit as tested with 64 Ethernet and eight FDDI ports.

Pros
- High levels of redundancy.
- Hot swappability.
- Static port switching.
- High port density.
- Large number of backplane channels.
- RMON support.

Cons
- Flawed user interface in graphical network management application
- Limited support of integrated internetworking
- Effective per-port price too high.
- RMON today supports only one of eight backplane channels

with both a single-slot card accommodating 20 10Base-T users and a dual-slot card handling 40 more. 3Com also offers a 24-port single-slot 10Base-T module.

ONcore allows ports on different modules to be combined in the same physical LAN via the backplane channels. Additionally, isolated Ethernet LANs can be built on each module simply by using the GUI or command-line management interface to link ports that have no connection to any backplane channel.

But islands of connectivity are not the rule, so the ONcore employs a multiport Cisco Systems, Inc. router to link disparate LANs. This device occupies one or two slots, depending on the model selected, and provides bridging and routing functions for four or more token-ring segments. An Ethernet version is in the works.

When designing the physical segments used in the hub, don't forget the internetworking implications. Every separate segment requires an additional port on the router module.

ONcore implements industry-standard RMON as its segment-level monitoring scheme. At the time we tested it, the hub supported only four of the nine Ethernet RMON groups — host, statistics, alarms and events. Further, statistics can be gathered on only one backplane channel at a time.

But according to 3Com, full RMON support was scheduled to be available in a subsequent software release by now. That release will also support collection of statistics from two backplane channels simultaneously. In addition, it will include such advanced features as protocol distribution and traffic capture and decoding.

In the version we tested, the RMON application — LANsentry Statistical Analyzer — clearly displayed such vital data as frame size distribution, network utilization in both percentage and frames per second, and error rates. The display is easy to configure, and statistics are available in tabular, pie chart and line graph formats.

The RMON stats are collected via an optional daughter card on the management module. The daughter card is topology-specific and can only monitor a single backplane channel. Thus, network managers will be unable to monitor all hub segments without making an excessive investment in both management modules and topology-specific daughter cards. Given this situation, you'll likely need external RMON probes if you want to monitor all active segments.

Hub management

Like most high-end hubs, the ONcore is managed by a flashy graphical applica

SHORT LIST NO-SHOWS

We also invited the vendors of the other two high-end hubs on our Buyer's Guide Short List — Cabletron and Bay — to participate, but both declined, citing too short a window before our publication date to provide the necessary equipment and support.

HOW WE DID IT

We tested an ONcore integrated system outfitted with 64 10Base-T Ethernet ports, eight FDDI ports, redundant network control modules that support multiple Ethernet segments, power control modules and redundant power supplies.

We configured eight Ethernet segments and tested three of them, plus two isolated channels on the module.

We tested for port configurability and backplane channel connectivity as well as port and module redundancy by connecting a Novell, Inc. NetWare 4.1 client to a NetWare 4.1 server through 10Base-T ports on the hub.

The NetWare 4.1 client was an Intel Corp. 60-MHz Pentium-based ISA/PCI-bus Dell Computer Corp. Dimension XPS P60 equipped with 16M bytes of RAM, a 518M-byte hard disk and a 3Com Corp. Fast Etherlink 10/100 PCI BusMaster adapter. The NetWare 4.1 server was a 66-MHz 486-based Tricord Systems, Inc. PowerFrame with an EISA bus, 16M bytes of RAM, a 523M-byte hard disk and a 3Com Etherlink III EISA-bus adapter. We used a Hewlett-Packard Co. Internet Advisor protocol analyzer to monitor net traffic.

To test port configurability, we connected stations by sharing a channel on the module and a channel on the backplane between two modules. The protocol analyzer verified that traffic was not propagated to other nets.

To test port redundancy, we connected two modules with external crossover cables. We attached the client to one module and the server to the other. Then we pulled one cable to see if the second connection would become active.

To test module redundancy, we pulled an active network management module and power control module to see if the backup would immediately become active. Because power modules are load-sharing, pulling one out while the hub was running had no visible effect on operation.

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SETTING THE STANDARD

tion running on standard platforms. The model we tested used Hewlett-Packard Co.'s OpenView. The software also runs on Sun Microsystems, Inc.'s SunNet Manager, IBM's NetView for AIX and Digital Equipment Corp.'s Polycenter Manager. While the application makes a glitzy first impression, it has fundamental flaws.

It is inexcusable that the manager provides misinformation. The application reports hub status by mirroring the status lights on installed modules. Green LED icons, for example, show the ports that are active on a particular Ethernet module. Unfortunately, the LEDs for the power supply module are permanently set to green by the management application and do not correspond to the status displayed on the actual module.

Further, no thought was given to making it easy to configure hub components via this application. A click on the outline of the network management module brings up a menu of three choices: 6106M-CAR, 6000M-MGT and 6100D-MGT. But what are these things?

After much research, we found the first refers to the slot the card occupies, the second refers to the main management module (the M-MGT is supposed to tell us its identity) and the last refers to the single daughter card (the D-MGT is supposed to tip us off to that).

What's wrong with using plain English? A network operator should not have to decode a vendor's product designations or have to be aware of physical subcomponents like the daughter card.

Download our Feb. 12 Buyer's Guide to high-end hubs, which includes a detailed comparison chart and Short List of products. Select NetRef, Buyer's Guides and Reviews, then High-End Hubs.

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Elsewhere, there are inconsistencies. Failed components are shown in red. However, some other components that are functional but currently inactive, such as Ethernet 10Base-T ports, are also shown in red. Other hub-based indicators, such as the status LEDs for the power supply fans, are simply absent from the graphical management application.

The management application refreshes its information from the hub on a cycle that the network operator cannot control. When a component becomes inactive, it may take just a few seconds or up to a minute before it registers. Thus, it is conceivable that end users could already be on the phone to complain about loss of connectivity while the network management application is still reporting that everything is fine. We attempted to force a refresh to check the status and, in doing so, actually found there is no way to accomplish this.

Add to this an on-line help facility that we found to be useless because there is no information on many topics and you have a management application that needs serious reworking.

Pricing options

Obviously, custom configurations are the rule when outfitting hubs, and we found no difference in this case. ONcore starts with $9,995 for an empty 10-slot chassis. Each power supply costs $895, and each controller card is priced at $1,995. The box we tested had three power supplies and two power controllers for a combined cost of $6,675.

Before you think about plugging in a port module, you have to stock up on network management cards and appropriate daughter cards. The management card lists for $4,195, and the Ethernet daughter card costs $1,495. The highest density Ethernet module we tested, the 40-port, two-slot module, lists at $6,995, or roughly $175 per port. But when the overall price of the other hub components are figured in, the effective price per port skyrockets.

To give you an example of how quickly costs add up, a 10-slot model configured with management and power redundancy, 120 10Base-T Ethernet ports and a four-port internal router lists for almost $75,000. That comes out to more than $600 per port for what amounts to four Ethernet LANs of 30 users each. The router component, a Cisco 4500 on a board, makes up $24,000 of the overall price. This seems to be a high price to pay for standard shared Ethernet per-user bandwidth.

It's clear from our testing that 3Com needs to fix its management application, deliver better internetworking tools and soften its pricing.

While the hub offers flexible port configurability, that may not be an advantage for long given how Fast Ethernet switches are gaining VLAN support. The ONcore hub supports a high level of component redundancy, too. But it's hard to justify the hub's price based solely on redundancy.

All things considered, 3Com has ample room for improvement on this product. ■

The alliance is a cooperative of users, consultants, educators and integrators that applies its technical and business skills to analyze and compare strategic network products. A list of alliance partners can be found on page 59.

Tolly is president and Curtis is senior engineer of The Tolly Group, a consulting and testing organization in Manasquan, N.J. Tolly and Curtis can be reached at ktolly@tolly.com and jcurtis@tolly.com, respectively.

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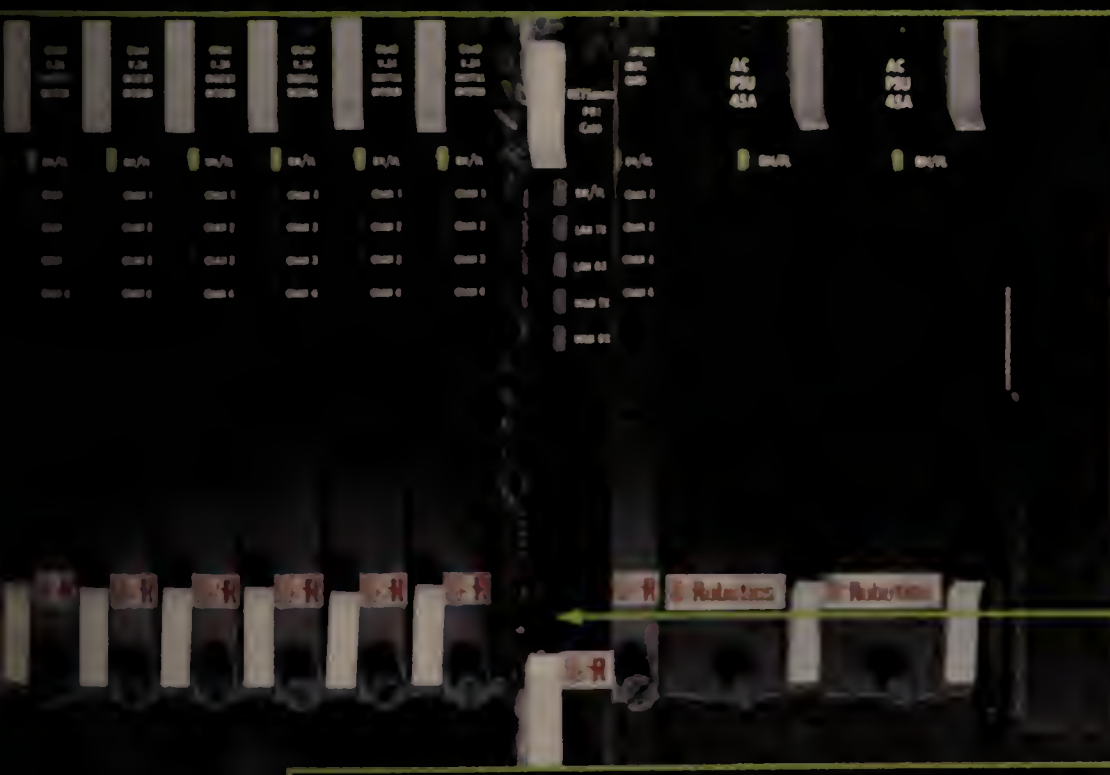

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CiscoBlue strategy: Bank on the strength of SNA

By Charles Bruno

For Dave Levandowsky, Cisco Systems, Inc.'s newly announced CiscoBlue strategy is a timely enhancement that will help him save precious mainframe cycles by off-loading certain tasks to his channel-attached router.

But for Ken Smith, who is trying to tame his Cisco routers to adroitly transport SNA data, CiscoBlue is little more than another promise from the company that sold him on the merits of IP encapsulation.

"We unfortunately made a decision to wrap SNA in IP," says Smith, manager of systems software at Canada Mortgage & Housing Corp. "The lack of native SNA support has hurt us. I think we lose 20% of our bandwidth due to IP overhead."

Levandowsky, however, sees CiscoBlue as a deepening of Cisco's commitment to SNA. He is eager to beta-test CiscoBlue products, such as the TN3270 Server software, which runs on Cisco's Channel Interface Processor (CIP) card.

Installing the TN3270 in the channel-attached router used to link an IBM 3090 to about 100 Cisco routers across Arizona would "off-load as many mainframe cycles as possible," says Levandowsky, a systems engineer at Arizona Public Service Co. (PSC), one of the state's largest electrical power suppliers.

Divided on merits

CiscoBlue is the router maker's recently announced strategy that spells out how to consolidate SNA and other networks, manage SNA and non-SNA resources, and integrate new switching technology.

It builds on a five-phase SNA integration strategy the company launched in 1991 that focused on allowing users to fold SNA traffic into IP backbones by supporting — among other things — channel-attached routers, IP encapsulation, Advanced Peer-to-Peer Networking and network management.

"The solutions of the first five phases made router nets possible replacements for SNA backbones," says Audrey Apfel, research director of logical networks at Gartner Group, Inc. in Stamford, Conn.

With the introduction of CiscoBlue two weeks ago, the company committed to extending the integration plan, promising to deliver products under the new architecture over a two-year period (*NW*, March 18, page 8).

But like users, analysts are divided on the merits of CiscoBlue. Some say CiscoBlue represents a lengthening of Cisco's lead in the SNA internetwork market. Others label it a "marketecture" to keep users in the router fold instead of migrating whole hog to Asynchronous Transfer Mode or LAN switching.

"There's an awful lot of this CiscoBlue strategy that isn't IBM Blue at all," says Frank Dzubeck, president of Communications Network Architects, Inc., a Washington, D.C. consultancy. Indeed, one-third of CiscoBlue defines a role for LAN and ATM switching in router-based internets. A major element of that is the introduction of token-ring switching, an area in which Cisco lacked a presence.

Not for everyone

While Cisco's initial five-phase plan has done well to convince scores of users to collapse their SNA networks into IP backbones, Gartner Group's Apfel says there are some inherent weaknesses in the IP encapsulation approach that the company is trying to build on with CiscoBlue.

Essentially, Cisco has taken IP technology, which is hard to engineer to SNA service levels, and added priority queuing and bandwidth reservation enhancements to help define SNA traffic flows.

"It's still a reach to meet all the classic service levels of an SNA world, so it's not for everyone," Apfel says.

Canada Mortgage is one customer that's less than happy with the approach. It migrated its SNA net to a Cisco-based 60-router IP backbone and is paying the price of IP encapsulation.

That's not surprising to Thomas Nolle, president of Voorhees, N.J.-based consultancy CIMI Corp. Nolle says his clients have run into a number of thorny IP-encapsulation issues.

"The likelihood of an organization coming through such a migration entirely happy is pretty low," Nolle says.

Canada Mortgage's Smith says his organization is looking to frame relay as a possible way to alleviate the pain of IP encapsulation. The idea will be to use one set of virtual circuits for IP and another for SNA. That way, he can design one set of circuits to meet the predictable SNA usage and increase the committed information rate on the IP virtual circuits to accommodate bandwidth needs.

Cisco's Betsy Huber, a product-line manager, concedes that IP encapsulation may not be the best option for SNA users. "If you need SNA class of service — which is how you prioritize by application — you're only going to get that with native SNA. Likewise, if you rely on SNA session switching among multiple hosts, IP encapsulation will not meet your needs.

"That's the reason we put in [APPN] Network Node," Huber says. "That's there for users who need native SNA support. We don't have religion about forcing users to do IP encapsulation."

Cisco also plans to add APPN High Performance Routing (HPR), which enables the network to nondisruptively route around failures, in the second quarter.

With the first five phases of the SNA integration plan under its belt, Cisco now aims to extend the capabilities by adding Phases 6 through 10 under CiscoBlue.

WHAT'S IN STORE WITH CISCOBLUE

Cisco IOS LAN/WAN convergence	Availability
▶ DLSw Lite ▶ LAN FRADs	1995-96
▶ TN3270 Server ▶ Switched SNA enhancements (1) ▶ SNA Dial-on-Demand	1996
▶ NCIA enhancements (2) ▶ Protocol Servers (3)	1996-97
▶ SNA session switching ▶ Channel-attached High Performance Routing	1997
▶ COS/TOS/QoS mapping (4) ▶ HPR native ATM support	1997-98

SOURCE: CISCO, SAN JOSE, CALIF

Footnotes:
1. This offering includes data link control options for ATM, ISDN, SMDS and PPP links.
2. Native Client Interface Architecture enhancements will enable workstation users to encapsulate SNA into IP locally instead of at the router.
3. Enhancements to Cisco's Internetwork Operating System give workstations access to SNA applications and TN3270 Server.
4. Software that maps SNA class of service features to TCP/IP and ATM.

But some analysts question if the new road map adds significantly to the SNA integration capabilities made possible through the first five phases. "Cisco already has the basic [SNA integration] problems fairly well in hand," Apfel says.

The company says CiscoBlue will build on those capabilities through extensions to Cisco's Internetwork Operating System LAN/WAN convergence strategy (see graphic); its CiscoFusion switching architecture; and CiscoWorks, its network management scheme.

Dzubeck and other analysts, however, question whether all three tracks are really relevant to SNA integration. "CiscoBlue's LAN/WAN convergence goals are very IBM-oriented, but the switching and net management are tangential," he says.

But Glenn Gabriel Ben-Yosef, president of Clear Thinking Research, Inc. in Boston, says he believes incorporation of switching will help guarantee users SNA class of service so they can "prioritize SNA legacy traffic over LANs."

It is clear, though, that the core SNA integration enhancements concern LAN/WAN convergence. And some of the most important capabilities promised are TN3270 Server, DLSw Lite, the Native Client Interface Architecture (NCIA), SNA session switching and channel-attached HPR.

The presence of TN3270 will be a boon for users looking to reduce their reliance on mainframe processing. Arizona PSC's Levandowsky says off-loading TN3270 processing to the router's CIP will make it possible to manage TN3270 sessions from SNMP-based systems, which will help reduce host maintenance costs.

Canada Mortgage's Smith also considered Cisco's CIP, but passed it over for less expensive IBM Open System Adapter cards, which tie up to five token rings directly to a host channel.

Analysts also are bullish on DLSw Lite, a form of Data Link Switching (DLSw) that doesn't support IP. DLSw is an IBM-developed technology that defines how SNA and NETBIOS traffic flows over a TCP/IP net. DLSw Lite imposes less overhead on SNA data, Huber says, using Logical Link Control 2 packets to ferry SNA across frame relay circuits.

While Cisco has downplayed the role of TCP/IP in DLSw, it has enhanced the support of that protocol in NCIA. The company has promised software enhancements that will enable users to put TCP/IP on client nodes, so a workstation product such as Wall Data Corp.'s Rumba could ship SNA in an IP stream across the net.

On another TCP/IP note, the introduction of SNA session switching will let Cisco's CIP route traffic between hosts, lessening the dependence on IBM's Virtual Telecommunications Access Method.

And on the SNA side, the addition of channel-attached HPR will add end-to-end nondisruptive routing of sessions to Cisco's existing APPN offerings. This will give SNA users a viable option to supporting SNA beyond frame relay and IP encapsulation techniques. Cisco has promised to deliver native ATM support for HPR in two years. This would enable APPN HPR nets to take advantage of ATM flow control and other services.

Cisco will have its hands full delivering on the next five phases that make up CiscoBlue. But the big question is whether the strategy will yield a broad enough set of SNA functions to let customers ditch those old SNA backbones.

Some analysts say that is already happening, and CiscoBlue will only strengthen the number of integration options.

"Their core strengths and core technologies are rooted in the IP world," Apfel says. "But Cisco is playing the right role for the dominant player in the industry by offering any option under the sun.■

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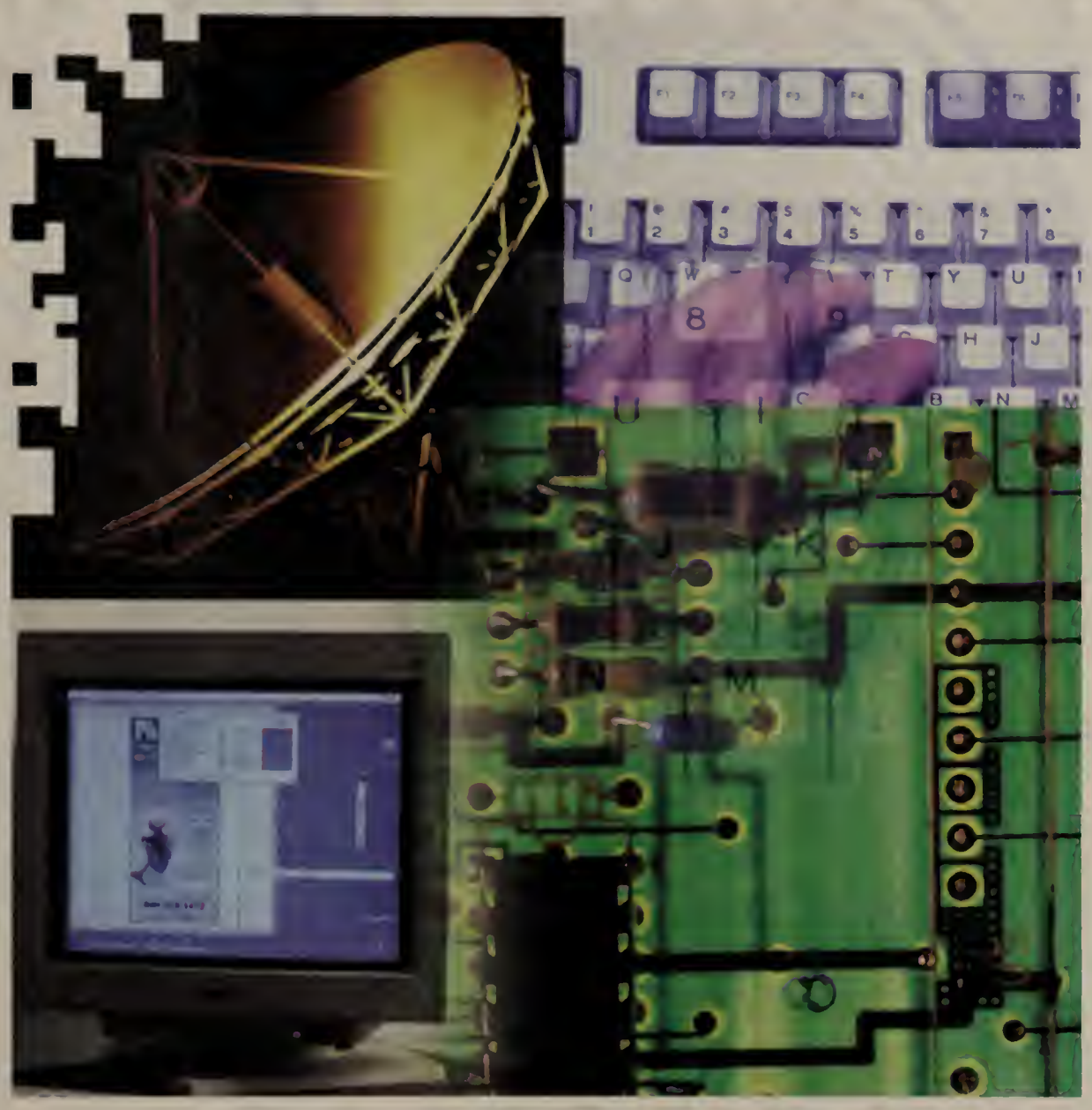

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Briefs

■ **The Open Group,** *a vendor and end-user consortium in Cambridge, Mass., is developing a* **Distributed Computing Environment (DCE) Administration Skills Certification** *program.*

To become a Certified DCE Administrator, users, system vendors and independent software vendors must complete an integrated series of DCE courses and tests. The courses and tests will be made available at locations worldwide in English, French, German and Japanese. The Open Group this spring will offer a precertification workshop designed to help qualified candidates confirm their readiness for DCE certification.

For more information, call John Raleigh at (617) 621-7290.

■ **Network World** *has added more dates and cities for its* **Internetworking: Designing LANs, WANs and Broadband Networks** *seminar.*

The two-day event will be offered in Atlanta, April 16-17; Washington, D.C., April 23-24; Chicago, May 7-8; Boston, May 14-15; San Francisco, June 11-12; and Bridgetown, Barbados, June 25-26.

Seminar leader Mark Miller, president of DigiNet Corp., will show participants how to integrate LANs and WANs using new technologies, including Asynchronous Transfer Mode, Fast Ethernet and frame relay.

Network World Professional Development Group: (800) 643-4863.

■ **Learning Tree International** *has launched its proprietary* **Internet Certified Professional** *program.*

To gain certification, users must complete four core courses and one elective course on Internet technology. Learning Tree also introduced two new Internet courses: Developing a Web Site — a Hands-on Workshop, which is a core course for certification, and Workshop and Hands-On Java Programming for the World Wide Web, one of seven elective courses.

Learning Tree: (800) 843-3210.

Filling the Windows NT knowledge gap

Here are three ways to acquire the talent needed to ensure Windows NT lives up to your strategic expectations.

By Steve Weissman

After months of agonizing over your choices for a next-generation operating system, you give the nod to Microsoft Corp.'s Windows NT. Now comes the tough part: finding people who can develop and support NT-based applications.

As you look around, you realize few, if any, current staffers have a clue as to what to do with Windows NT. Your choices are to develop the talent in-house, bring in some NT mercenaries on a contract basis until you can acquire in-house talent, or farm out your entire NT development program (see graphic).

"In some ways, you could say NT is a victim of its own success," says Celeste Boyer, Microsoft's manager of certification and one of the principals behind the company's NT training initiatives.

"NT Server in particular is coming into its own worldwide, and we've found there are significant numbers of NT jobs just waiting to be filled," she says.

Microsoft seems to be doing its part to plug the gap. The company has invested some $18 million during the past year and a half in NT certification programs. It also has trained more than 70,000 people on NT in the last year alone. But the number of NT-related positions is growing faster than the number of available candidates, setting up today's hunt for qualified professionals.

Executive recruiter Brian Hoffman, a senior partner at Winter, Wyman & Co. in Waltham, Mass., says the problem is endemic to any new technology, but is particularly bad with respect to NT because it is both a server and workstation operating system. "Some companies are looking for people to be both backroom technicians and user-friendly helpers who can support end users," he says. "[But] such people don't exist."

Weighing your Windows NT options

OPTION	PROS	CONS
Train existing staff	▶ You retain the talent. ▶ Developers appreciate your investment in their careers. ▶ Fosters team spirit.	▶ Unpredictable costs over time. ▶ Time-consuming. ▶ You risk losing talent to another company.
Hire outside help on a project basis	▶ Instant productivity. ▶ Makes costs more predictable. ▶ Enables you to quickly acquire resources to match workload.	▶ High onetime costs. ▶ Internal staff may feel threatened. ▶ Outsiders may be unfamiliar with business.
Totally outsource	▶ You build a relationship with development house. ▶ Frees internal staff for other projects. ▶ Makes costs more predictable.	▶ Expensive. ▶ Internal staff may feel threatened. ▶ You are dependent on outsourcer's ability to provide required resources when needed.

SOURCE: KINETIC INFORMATION, WALTHAM, MASS.

Hoffman believes the key is to strike a balance between investing in your own people and renting outside experts on a project or time-limited basis.

"Whenever something new comes along, management always wants to run the least risk possible," Hoffman says. "This means they look for the most experienced people they can find and put them to work right away, even if they could have done better long-term by drafting the best talent available and letting it develop. A lot of times, the resource they want is already working for them, only they don't stop to look."

Better living through training

The shortage of NT programmers has not been a real problem for NSI, an application development firm in Hoboken, N.J. In fact, the company thrives on the type of shortages new technology such as NT creates. It has an ongoing training program that enables the firm to view the need to embrace new technologies as a key to its success rather than as a threat to its survival.

"It's important not to staff your company with experts in one new technology because next year you'll need them to know something else," says company President Don Beeler. "We actually assume our developers are going to be doing something different next year, and we look for young people who are motivated by that challenge."

By hiring young, NSI keeps its costs down and leaves room to give top performers healthy increases without breaking the bank. But it also means its development organization may run short on valuable experience, which is why Beeler also has a couple of gurus on staff whom he pays top dollar to solve problems and mentor the up-and-comers.

Surprisingly, Beeler says NSI hasn't lost a single programmer to a better offer, though he assumes this will happen at some point. The reason, he says, is that the company's mission to stay on the bleeding edge means it must constantly train its people on the newest technologies. This results in a staff that believes financial rewards are not the only way the company shows it cares about them and that they won't get locked into dead-end jobs.

Talent from the outside in

A variation on this theme is to mix in a healthy component of outside help with inside expertise, an approach many companies use to keep the internal staff size aligned with daily operations and still guarantee access to resources when crunch time comes.

Paper and pulp giant Weyerhaeuser Co. takes this approach. According to Gloria Alexander, manager of IT standards release management, the trick to making this strategy work is to arrange for third-party support on a long-term basis and have the hired guns work on the more mundane projects.

"We're not looking for 30-day snipers," she says. "Most of the time, we're using them to pick up on things that are not NT-specific to give our internal folk time to catch up on NT."

The road best taken

Whether you choose to train your own people, bring in outside help or adopt some combination of the two, make sure you select a staffing strategy that is consistent with your organization's core philosophy.

Ron Fovargue, manager of customer support at Frontier Information Technologies Co., the technology arm of long-distance telephone company Frontier Corp. in Rochester, N.Y., emphasizes two critical needs.

"First, you must really understand your company's culture and drivers as they relate to building project teams and budget authority," he says.

"Second, you must look at your company's strategic goals and objectives and understand what the strategic drivers are. Only then are you prepared to make a list of alternatives that are likely to be accepted," Fovargue says.

And since nothing happens without such acceptance, this advice is critical to would-be "NTers."

Otherwise, you're likely to end up with solid migration plans and nobody to see them through.

Weissman is president of Kinetic Information, a Waltham, Mass.-based consultancy specializing in business process redesign, workflow, electronic forms and collaborative computing. He can be reached via the Internet at 76143.3463@compuserve.com or by phone at (617) 893-4690.

ONLINE

Find out where you can get schooled on Windows NT or find Windows NT jobs by using the hotlinks found on Network World Fusion. From the home page select Careers, then click on this topic: Filling the Windows NT knowledge gap.

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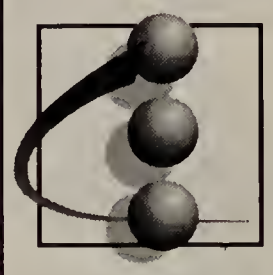

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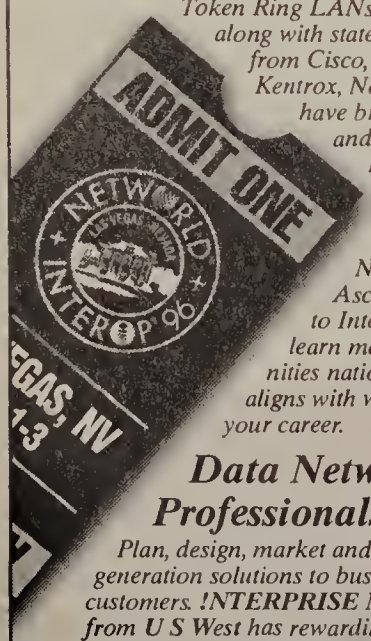

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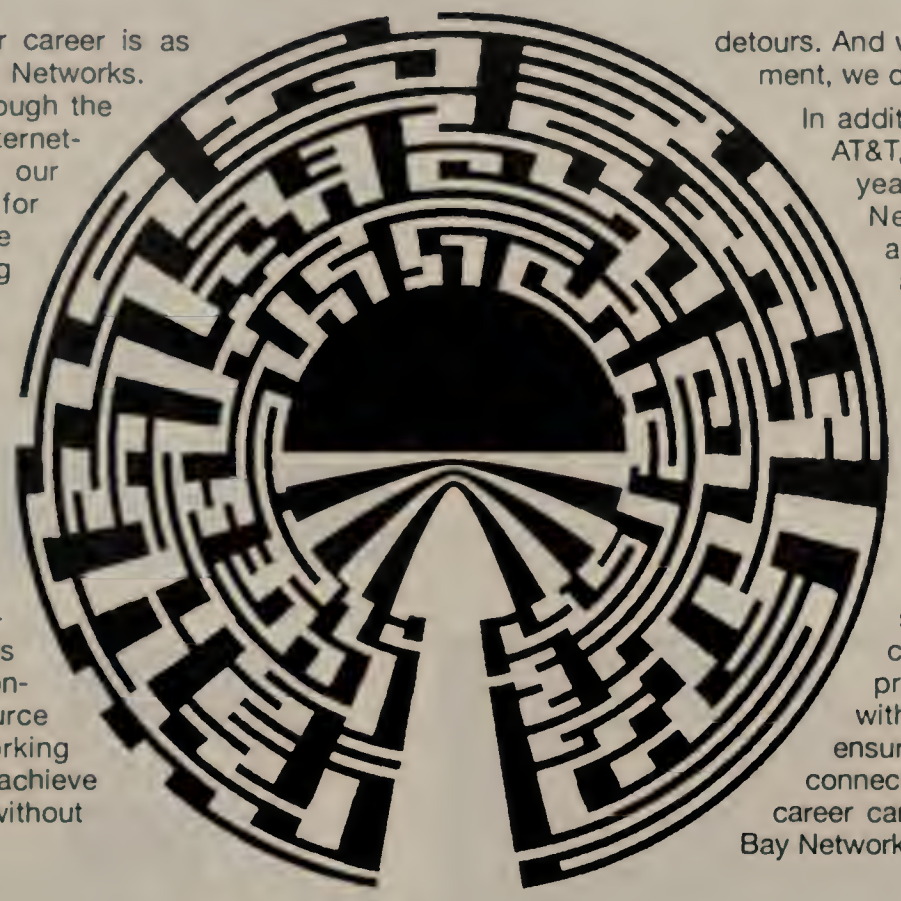

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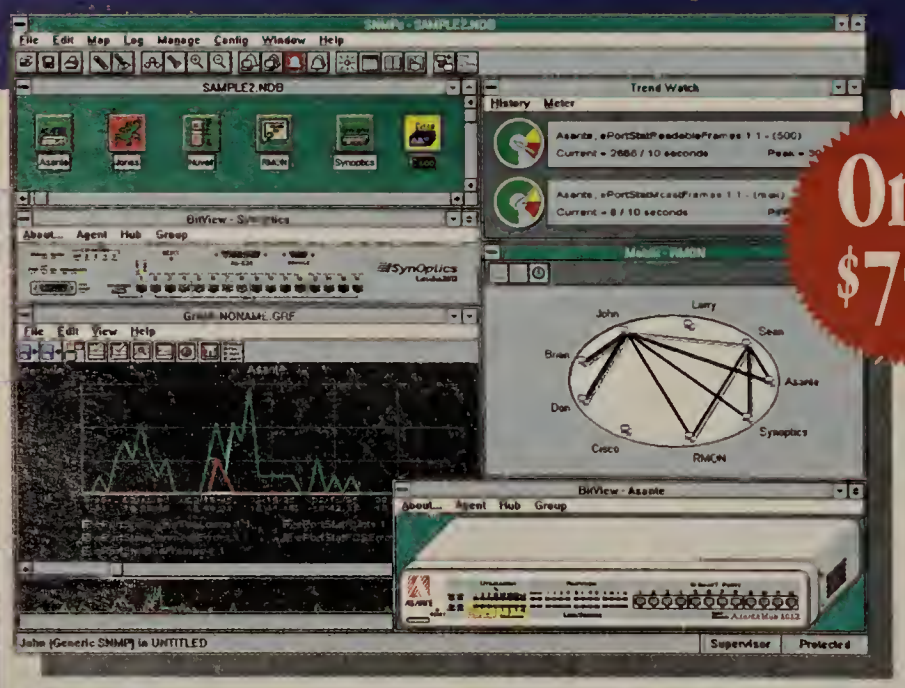

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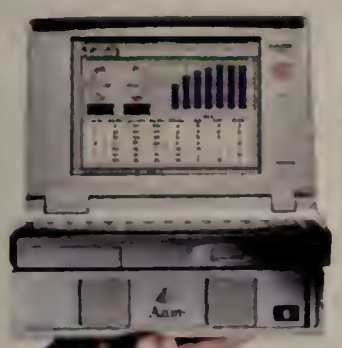

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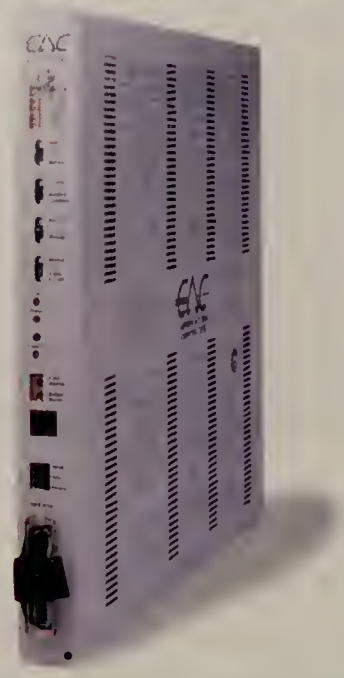

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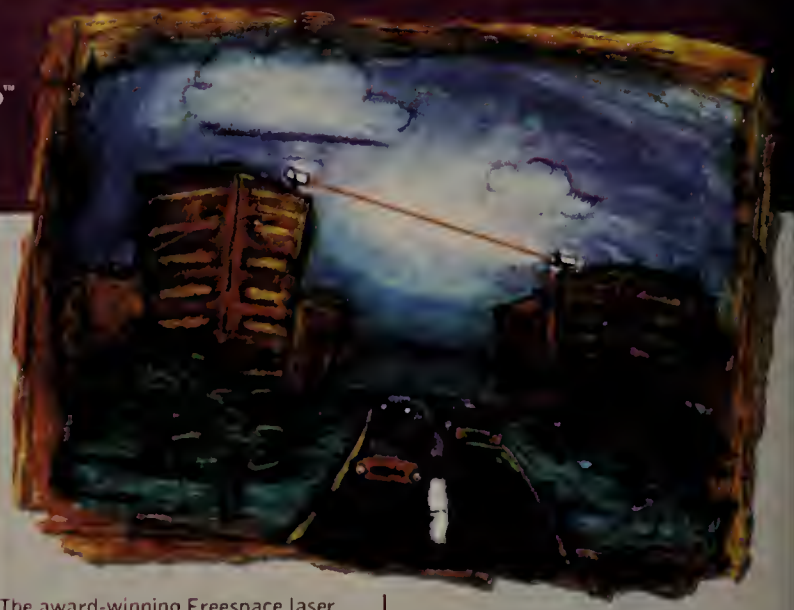

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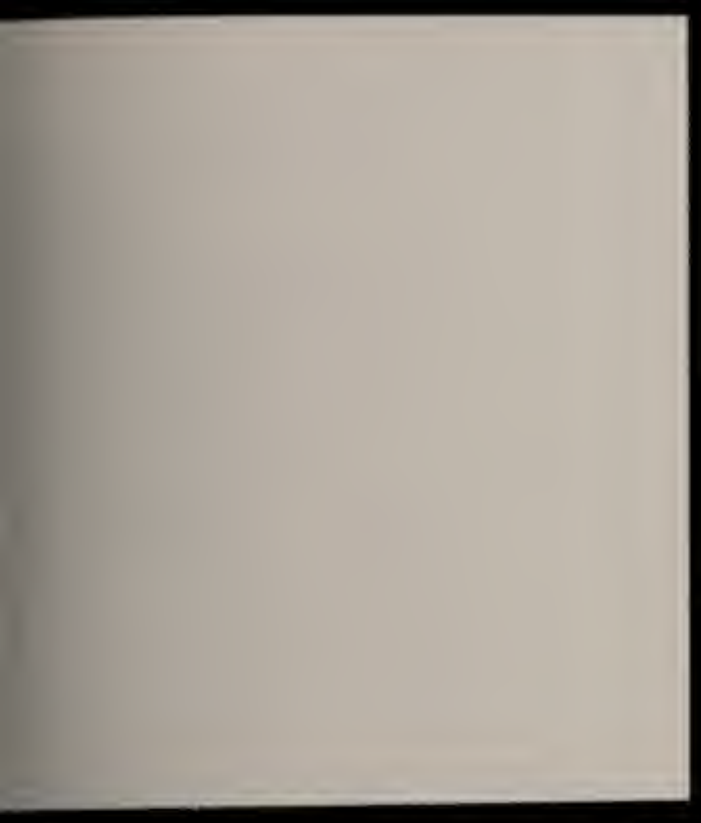

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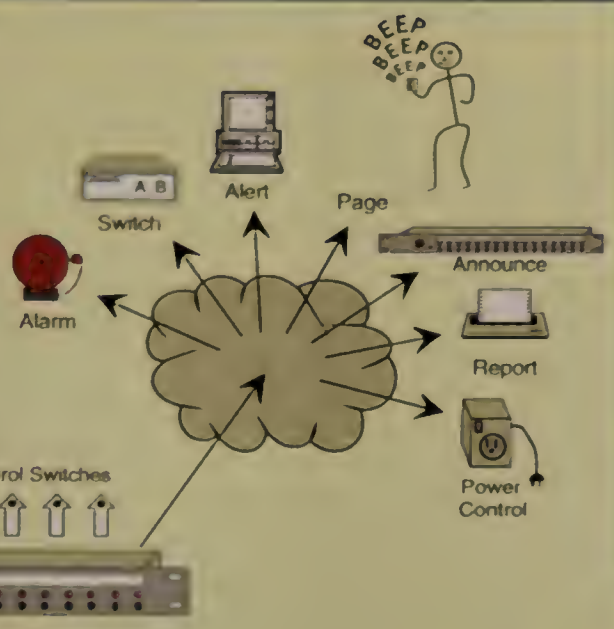

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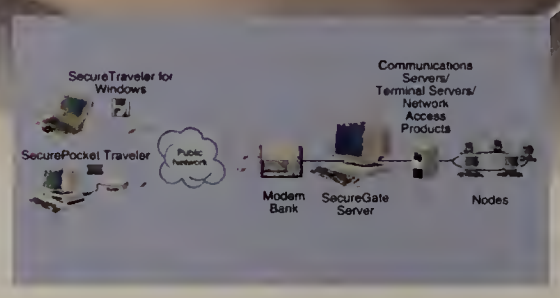

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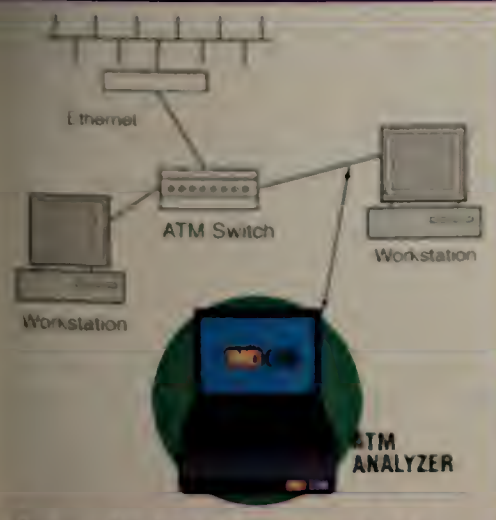

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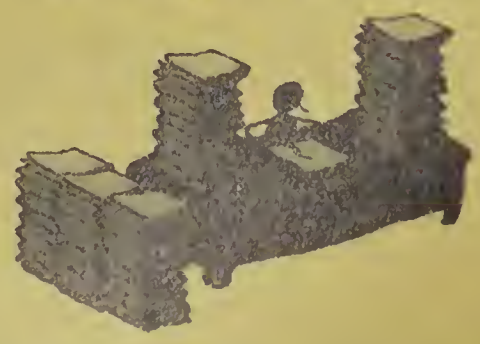

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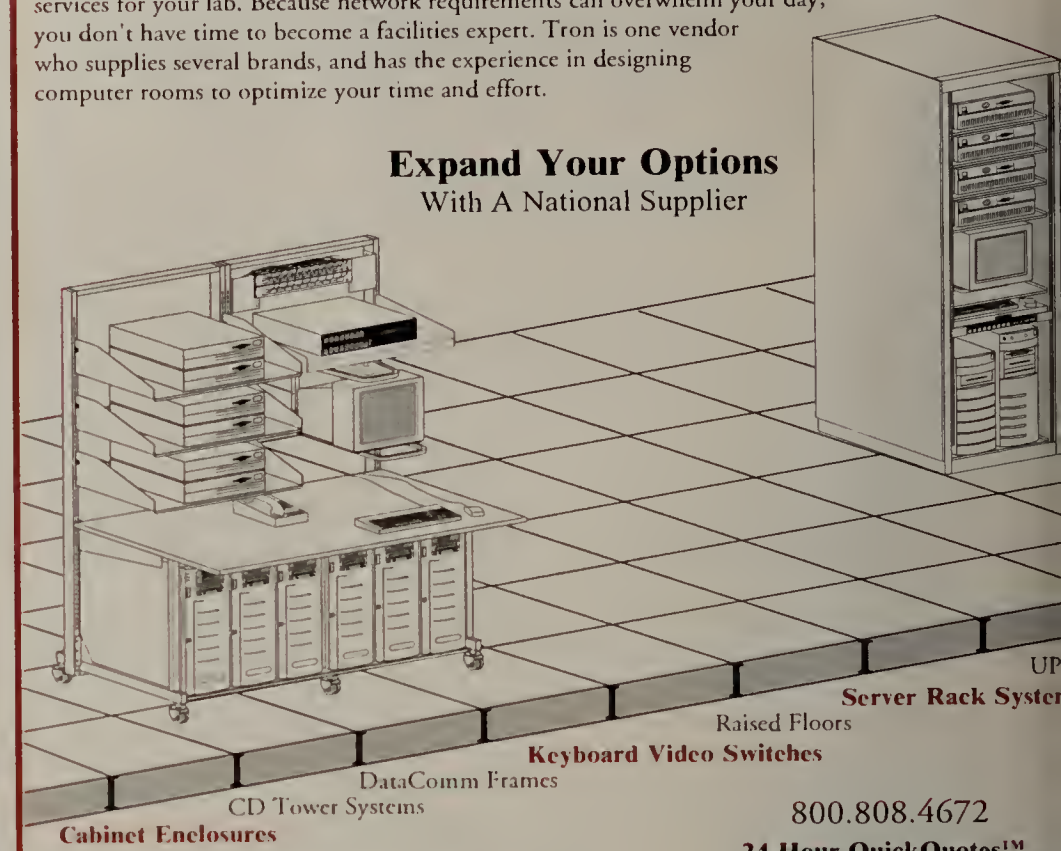

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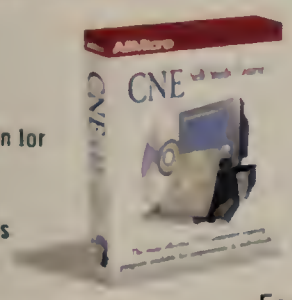

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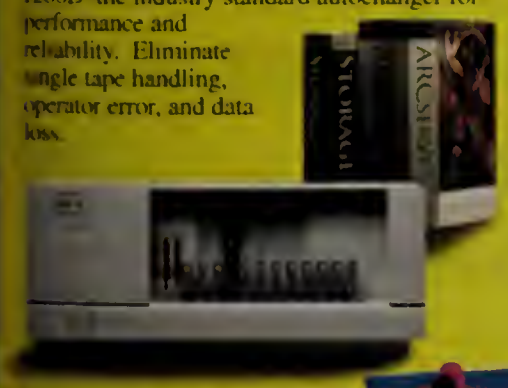

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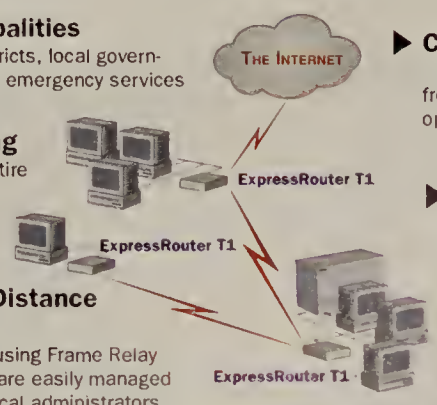

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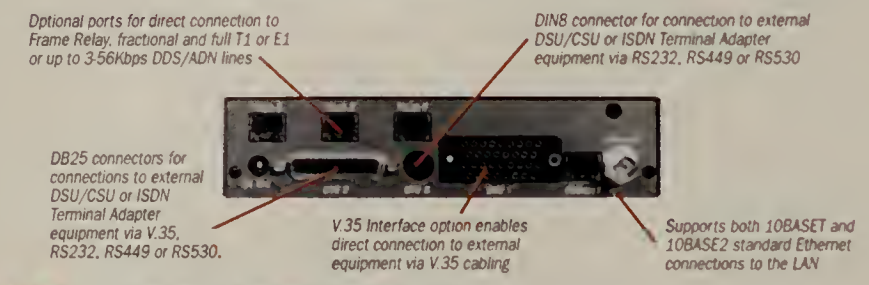

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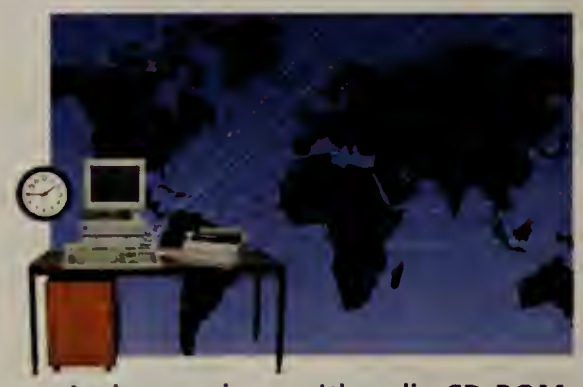

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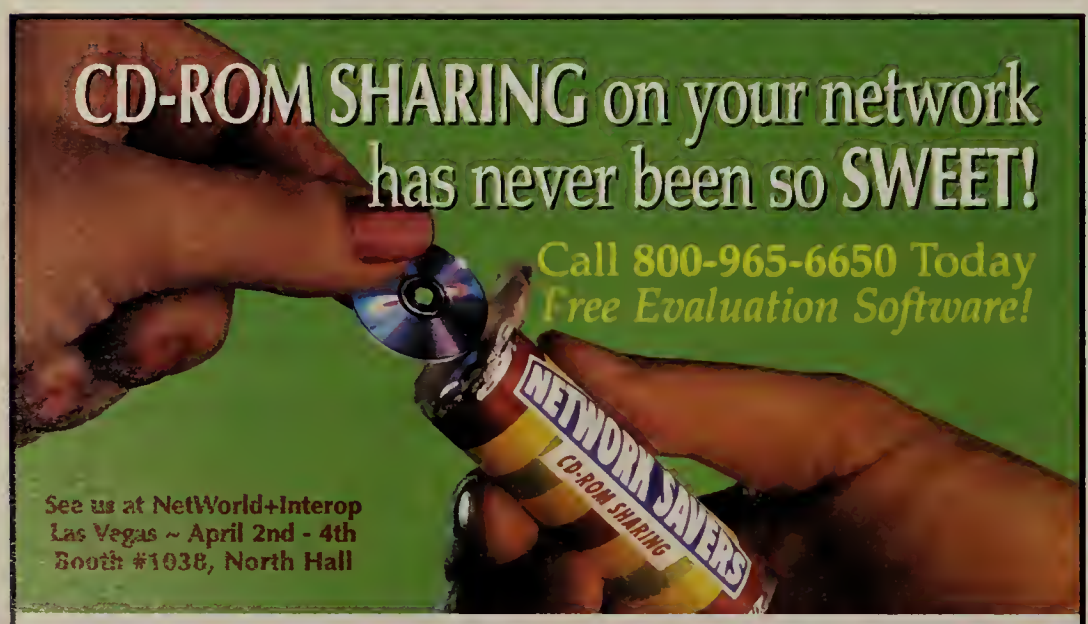

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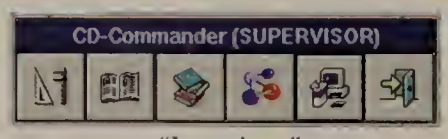

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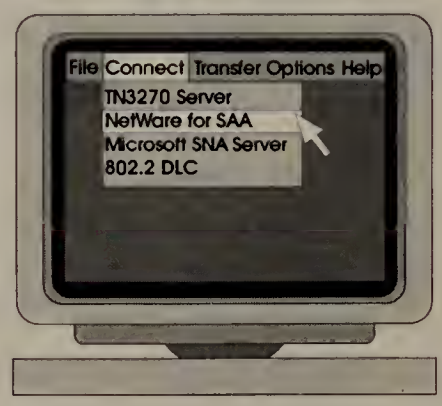

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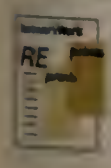

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EDITORIAL INDEX

3Com 31,32,55,65
A
AOL 52
Apertus 51
Aspect Software 52
AT&T 10
Attachmate 41
Aurora Systems 19
B
Baan 44
Bay 1,31
BBN Planet 25,87
BGS 1
Business Objects 41
Business@Web 44
C
Cabletron 1,31,86
Checkpoint 87
CI Labs 6
Cisco 1,6,19,25,58,68,88
Citrix 52
Colusa 52
Compaq 1
Cylink 51
D
Digital 31
E
Enigma Logic 51
Epilogue 1
F
Fore 6
Fujitsu 48
Fulcrum 44
H
HP 1,41
I
IBM 1,6,14,31,41,51,58
ImageNet 19
Intel 39
J
JetForm 51
K
KeyLabs 6
Ki Networks 14
L
Learning Tree 71
Lite-On 31
Lotus 6,8,10
Lucent 19
M
Madge Networks 31
McAfee 39
MCI 10,20
MESA Group 6,41
Microsoft 6,24,44,52,63,71
N
NBase 31
nCompass Labs 52
NCR 19
Netscape 41,52,63
NetStar 25
Network Multimedia 48
Network Solutions 25
NobleNet 31
Nortel 6
Novell 6,8,31,34,48,58,90
O
Object Design 41
OnStream 19
Oracle 41
P
Personal Productivity Tools 51
Platinum 16
Preferred Systems 31
Psion 41
R
R.R. Donnelley & Sons 41
S
SAP 44
Security Dynamics 51
Sequel 6
Silicon Graphics 52,63
SNMP Research 1
SoftArc 41
Sprint 25
StonyBrook 19
Sun 6
SunSoft 6,39
Sybase 16
Symantec 39
T
TIS 87
Tivoli 14,15
Tut Systems 38
U
UUNET 25
V
Vitel 88
X
XLNT Designs 38

For a list of Web server vendors, see page 62.

ADVERTISER INDEX

Network World

Advertiser	Reader Service#	Page#
3COM	49	
ACC	35	
ADC Kentrox Industries	52	
Allied Telesyn International	14-15	
Ascend Communications	2-3	
Ascom Timeplex	50	
Bay Networks	21	
Cabletron Systems Inc.	40	
Centillion Networks	9	
CNT Bnxton Systems	20	
Compaq Computer Corp.	27,46-47	
Cray Communications	17	
DCI/M.E.N.	70	
Deutsche Telekom	12-13	
Digital Equipment Corp	91	
Fore Systems	44-45	
FTP Software	33	
General Datacomm	24	
Gensym Corp.	48	
IBM	22-23	
Lotus Development Corp.	7	
Madge Networks	4	
Markham Computer	32	
Matrox Electronic Systems	30	
Meckler Media Corp.	42	
NetManage Inc.	10	
Nuera	92	
Openconnect Systems	16	
Optical Data Systems	36	
Penril Datacomm	11	
RAD Data Communications	29	
Softbank Corp.	53	
Standard Microsystems Corp.	26	
Stratacom Inc.	18	
UB Networks	43	
Unified Network Services	38	
US Robotics Inc.	66-67	
Ventlink Corp.	34	
Visitel	69	
Xylan Corp.	25	
Xylogics Inc.	37	

Regional Demographic
Ads appear in selected issues

Novell	56-57
SNET	28
Strategic Networks Corp.	28

Marketplace Advertiser Index	Reader Service#	Page#
ADIC	246	81
Allmicro Inc.	249	81
American Power Conversion	294-299	77,79,81
Azure Technologies	224	75
Capella Worldwide	268	80
Carrier Access Corp.	251	76
Castle Rock Computing	252	74
CD Solutions	223	82
CNT Bnxton Systems		74
Cylink	250	78
Data Interface	238	82
Dataprobe	285	77
DEI	245	82
Eastern Research	225	79
Engage Communications	301	82
MaxNET	267	77
Mier Communications	288	80
Ometrix	257	82
RADCOM	300	79
SilCom Manufacturing	269	76
Technically Elite	247	76
Tron International	233	80
Wright Line	279	74
Xecute	291	80

Network World Fusion www.nwfusion.com

Advertiser	Location
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Microsoft	Archive, Front Page, News, NetFlash, NetRef
Nortel	News
Standard Microsystems	Local Networks
Stratacom	Stocks

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Silcom	Marketplace
TAC Systems Inc.	Marketplace
TGV	Marketplace

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Cabletron

Continued from page 1

tron switches as well as the firm's previously introduced Virtual Network Server (VNS) to provide routing, call accounting, policy management and connection management services.

Until now, few sophisticated VLAN management tools have been available to let customers unleash the power of switches.

"We can use it to figure out who is using the network and then allocate the costs of running the net according to that information," said Ronald Hudson, assistant director of networking services at Johns Hopkins University in Baltimore. "This gives us a whole new view of the network that mimics the telephone model where you get billed for network usage."

Cabletron will offer a basic application, dubbed Virtual LAN Manager, that lets firms configure VLANs, control routing and set up policies for net access and bandwidth allocation. For larger customers, the company will provide its Virtual Network Manager, which boasts more sophisticated management features, such as accounting functions for bill-back purposes and improved security and traffic prioritization policies.

Customers can get a firsthand look at the Unix-based management applications next week here at NetWorld+Interop 96.

By offering two management tools, Cabletron is giving customers the chance to choose the right application for their environment, said John McConnell, president of McConnell Consulting, Inc. in Boulder, Colo.

"The two-piece offering allows users to [do basic] VLAN management with the Virtual LAN Manager, while the Virtual Network Manager will allow a lot more capabilities for watching how the business works on the network," McConnell said.

He explained that the high-end tools let users match their network setup to the way people use the net.

McConnell said SecureFast Virtual Networking puts Cabletron ahead of the pack when it comes to VLAN management offerings.

Competitors 3Com Corp., Bay Networks, Inc. and Cisco Systems, Inc. offer tools for basic VLAN management. But it falls short in offering sophisticated policies, he said.

What do you need?

To take advantage of SecureFast Virtual Networking, a customer's switches must be outfitted with a piece of software called SecureFast Switch Client. This provides integrated routing functions, including segmentation, address resolution, security firewalls, broadcast control and path determination.

Any Cabletron-developed switch that has shipped since 1993 can be upgraded via firmware to support the client.

Customers also will need to purchase VNS, a centralized server that sets up all of the switch connections and keeps track of call accounting data for user policy information.

With those components in place, customers can choose either of Cabletron's new graphical user interface management applications to monitor their switched network. The tools will work with Cabletron's Spectrum net management application.

The SecureFast software will be available by early summer. Pricing has not been set.

✆Cabletron: (603) 332-9400.

Making waves with Tsunami switch

NetWorld+Interop 96 show-goers next week will get a sneak peek at the newest Cabletron Systems, Inc. SmartSwitch device: a stand-alone 10M/100M bit/sec switch designed for departmental networks.

The switch — code-named Tsunami — offers 14 10M bit/sec full-duplex ports with two slots for Fast Ethernet copper or fiber links. The store-and-forward switch boasts a forwarding rate of 250,000 packet/sec and supports as many as 8,192 media access control addresses, according to a Cabletron official.

The device supports all nine Remote Monitoring groups per port and will take advantage of Cabletron's SecureFast Virtual Networking capabilities, which will be unveiled at the show.

The new SmartSwitch device extends the company's Fast Ethernet product line, which is currently anchored by the FastNet products obtained by Cabletron last year from Standard Microsystems Corp. The FastNet products are targeted at the workgroup, whereas the internally developed Tsunami SmartSwitch device offers more sophisticated virtual LAN and management features necessary for departmental devices.

Tsunami will cost less than $500 per port. It is due this summer.

—Jodi Cohen

SNMP

Continued from page 1

Jeffrey Case and Marshall Rose will round up their troops to duke it out over just how to implement a secure SNMPv2 network.

Case's battalion, fighting under the SNMPv2* flag, includes Hewlett-Packard Co., Cisco Systems, Inc., Bay Networks, Inc., BGS Systems, Inc. and SNMP Research, Inc. They will hold the first public demonstration of SNMPv2*-based security, including remote configuration of SNMPv2-managed devices.

Rose's platoon, united under the User-based Security Model (USEC) banner, is made up of IBM and Epilogue Technology Corp. Having already demonstrated USEC at last month's ComNet '96 show, they will host a Birds-of-a-Feather session on USEC-based security in SNMPv2.

At issue is whether remote configuration of managed devices should be included in the SNMPv2 security and administrative framework (*NW*, June 26, 1995, page 1). The SNMPv2* camp insists remote configuration is absolutely necessary to the security capabilities of SNMPv2. The USEC camp claims it adds too much overhead.

The rift led to the dissolution of the SNMPv2 working group within the IETF late last year (*NW*, Oct. 10, 1995, page 24). But following Interop, the SNMPv2* group plans to revisit the "open" process of standardization by committee and resurrect a working group within the IETF, Case said.

Rose is happy to let the market decide the better SNMPv2 security implementation.

"What we saw in '95 was a collapse of the IETF process," Rose said. "So at this time, I certainly favor a clean conflict in the market to decide this since it's clear that the IETF lost considerable credibility last year."

Users agree that the marketplace should decide.

"With this dragging out of SNMPv2, there is some loss of confidence [in the IETF]," said Vishal Desai, network manager at the National Aeronautics and Space Administration's Goddard Space Flight Center in Greenbelt, Md. "I'm going to wait to see how the market decides, but I would obviously like to have IETF's blessing at some point."

Case says he is up to the marketplace challenge. "Marshall's being very, very aggressive about things, and he's going to get a little bit of aggression right back at him," he said. "We're going to try to have a fairly strong market response."

Case said he is confident the SNMPv2* demo will be impressive and hopes that it will prompt IBM and other USEC warriors to defect. Rose is equally confident that this will not happen.

"I think if we were to see a Cisco router, HP OpenView and a Bay switch implementing SNMPv2*, then I guess he'll have delivered," Rose said. "For myself, I would be rather skeptical, but then again I'm happy to be surprised." ■

Bay Networks

Continued from page 1

tween our [virtual] nets," said David VanMiddlesworth, network manager at the University of California at Los Angeles' Graduate School of Management. "When we do, we'll probably put [an ATM VNR Module] in as a step between switches."

The ATM VNR Module works with the System 5000's 2.5G bit/sec 5000AH ATM switching engine, routing between VLANs over virtual circuits on a single ATM interface, rather than requiring the customer to dedicate an interface per VLAN.

The module features a single 155M bit/sec connection to the 5000AH. It discovers paths through the network, while the 5000AH forwards cells to those paths.

That's all well and good, but performance is key, analysts said.

"If you've got that much overhead in doing the segmentation and reassembly basically twice, how fast could the damn thing be?" asked Mary Petrosky, a senior analyst with The Burton Group in San Francisco.

The ATM VNR Module can be configured with logical interfaces to one or more VLAN segments. A single module may be configured with interfaces to all of the logical segments defined in the network.

In larger networks, logical segments may be administratively split between two or more ATM VNR Modules.

The modules connect to one another over a System 5000 1G bit/sec parallel packet exchange backplane. WAN connectivity is provided through a separate DS3, E-3 or 155 bit/sec ATM port on the System 5000 chassis.

The ATM VNR Module supports Ethernet LAN Emulation, the IETF's Classical IP over ATM specification for IP routing over an ATM infrastructure and User-Network Interface 3.0 signaling. The module is based on the same Motorola, Inc. PowerPC architecture as Bay's ATM Routing Engine (ARE) for the Backbone Node router.

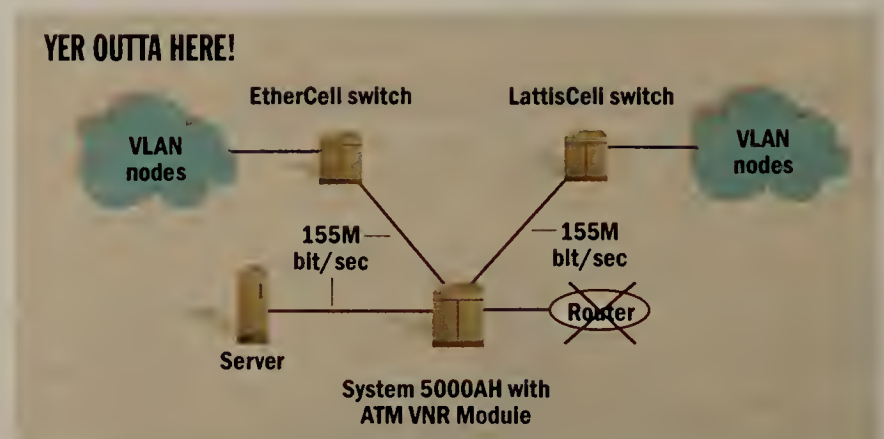
Filling in BaySIS

The ATM VNR Module is the latest piece in the transport services category of the Bay Networks Switched Internetworking Services blueprint, or BaySIS. Transport services include the technologies used to move data, video and voice traffic through an internetwork, such as routing, switching, wide-area networking and shared-media connectivity.

Other components of BaySIS transport services include the 5000AH, and the 155M bit/sec ARE processing and interface module for the Backbone Node router, which debuted last fall (*NW*, Sept. 25, 1995, page 27). The ATM VNR Module is an alternative to an ARE-equipped Backbone Node.

Pricing and availability of the ATM VNR Module were not available at press time. Bay declined comment.

✆Bay: (408) 988-2400.



Bay's ATM Virtual Network Routing Module for the System 5000AH switch will replace stand-alone routers for interconnecting virtual LANs through a single ATM interface.

BBN Planet adds Web hosting service for smaller customers

By Joanie Wexler
Cambridge, Mass.

BBN Planet last week served up some pocketbook relief to companies interested in outsourcing Web hosting tasks but unable to shell out thousands of dollars each month for the service.

Targeting small and midsize companies, BBN Planet added a $295-a-month service, dubbed Web Advantage Silver, to its 14-month-old Web Advantage Gold and Bronze offerings. Silver differs from its $2,000- to $6,000-a-month Gold cousin in that the customer shares a BBN-maintained server and Internet bandwidth with other customers. The Bronze option simply allows users to collocate equipment in BBN Planet points of presence.

The Silver option carries a usage-based pricing scheme, while BBN Planet's other hosting services are fixed prices.

The $295 buys 60M bytes of storage and 300M bytes of transmission from the server. Users pay 18 cents a megabyte after the first 300, said Carl Howe, BBN Planet's product manager for World-Wide Web services. The company runs a statistics package that allows users to track their usage, he said.

The Silver service, like the Gold, includes use of a Sun Microsystems, Inc. or Silicon Graphics, Inc. server, Netscape Communications Corp. back-end server software and server management.

Howe said the service will be sold not only by BBN, but also by its 50 business partners, which include several computer resellers and integrators.

AT&T, which resells BBN Planet dedicated 'Net access services, sells BBN Planet Web hosting services along with its own. ■

Firewall aims to segment intranets

By Ellen Messmer
Rockville, Md.

Trusted Information Systems, Inc. (TIS) this week will unveil a new line of firewall products designed to exert network access controls over intranet workgroups, remote offices and mobile laptops.

Traditional firewalls act as a single sentry, controlling access from the Internet to the perimeter of the enterprise network through application filters and encryption. TIS is extending these security controls through new products that can wall off LANs or control remote office and laptop net access — all managed from its flagship product, the Gauntlet Internet Firewall.

By June, TIS plans to ship the Gauntlet Intranet Firewall for controlling access to and from subnets where sensitive marketing or accounting information is shared. The product is priced at $7,500.

TIS also will ship the Gauntlet Net Extender, a remote office firewall priced at $10,000.

To safeguard traffic generated by road warriors and telecommuters, TIS has developed Gauntlet PC Extender, a $100 PC IP stack encryptor. PC Extender can be set up to encrypt traffic to the firewall or from PC to PC.

Michael Papais, a software systems integrator at Chrysler Corp., said the firm was interested in the centrally managed remote access products but saw limited need for the Gauntlet Intranet Firewall. Instead, Papais would simply apply the Gauntlet Internet Firewall to Chrysler LANs for workgroup security.

Another firewall vendor of Unix and NT security products, Checkpoint Software Technologies, Inc., said the TIS intranet firewall idea is nothing new.

"Our firewalls are already being used internally and can be centrally managed," Checkpoint spokeswoman Emily Cohen said.

TIS: (301) 527-9500; Checkpoint: (415) 562-0400.

Tariffs

Continued from page 1

David Eisenlohr, vice president of telecommunications and computer operations at the Pacific Stock Exchange in San Francisco, said a tariff-free market would simplify price negotiations and allow carriers to be more flexible in their pricing schemes. He said this might alleviate incidents like a recent negotiation nightmare the Exchange had in ordering a simple T-1 line from AT&T.

"The day the circuit was to go live, they came back and said tariffs prevented them from giving us the negotiated price and that it was going to be 30% more," Eisenlohr said. "They didn't have authority they thought they did to negotiate price. So we threw them out" in favor of Sprint, he said.

FCC officials also said that de-tariffing would end the practice of carriers offering a multiyear discount contract at what appear to be fixed terms, but then raising prices in the middle of the term because the contract refers to a so-called underlying tariff.

Roadblock removed

If the FCC dumps its bundling prohibition, it will be easier for carriers to navigate through systems integration deals and put traditional outsourcing firms at a disadvantage, Blaszak said. "It could hurt EDS and Advantis," he said.

GOOD NEWS FOR TREES, TOO

Under the FCC's proposal to end long-distance tariffs, a lot of paperwork would be eliminated, including a total of 4 million pages submitted each year from the 10,000 tariffs filed.

AT&T officials, in particular, rang in with a strong endorsement of dropping the unbundling rule. "This would give carriers another avenue for offering attractive and innovative packages to customers," according to an AT&T statement made hours after the FCC meeting.

The Independent Data Communications Manufacturers Association (IDCMA) has repeatedly argued that getting rid of the unbundling rule could favor large networking firms such as Cisco Systems, Inc., which enjoy cozy relationships with the major carriers and threaten smaller router, hub and access device manufacturers' survival.

Some observers expressed concern that de-tariffing could make the long-distance industry look like the airline industry, with a wild profusion of calling plans at huge price disparities.

And without tariffs, some smaller users could have a hard time getting services such as frame relay up and running because only under a tariff is a carrier forced to provide service to all comers.

But it could be some time before the FCC proposal takes effect. It must go through at least one formal comment period.

"It could be a year or so before this thing works itself out and services are de-tariffed," said Jack Nadler, an attorney for the IDCMA and a zealous defender of the unbundling rule. But Blaszak disagreed, saying the FCC could finalize action in six to nine months.

Senior Editor Joanie Wexler contributed to this story.

More than half a century of tariffs down the tubes?

If enacted, the FCC's proposal to end long-distance tariffs would mean:

- Users and carriers could freely negotiate rates on all services.
- Carriers no longer could change rates during term contracts.
- Carriers could bundle services with voice and data network equipment on a single contract.
- Carriers' managed WAN and systems integration offerings would get a big boost.
- Users with frame relay contracts signed before the initial frame relay tariffs took effect on Feb. 5 may be safe from these changes.

Compaq

Continued from page 1

agement tool that comes with all Compaq servers, with Cisco Systems, Inc.'s IOS router software. This will allow Insight to manage Cisco routers along with Compaq's own gear.

Compaq also hinted that it would integrate Insight with higher end net management platforms, such as Computer Associates International, Inc.'s CA-Unicenter, letting Insight collect data and manage a range of network devices.

■ A line of Pentium-based stand-alone routers aimed at workgroups and small businesses running IOS. They will feature various LAN ports such as Ethernet and FDDI, as well as WAN ports such as X.25, ISDN and frame relay.

■ A SmartStart API that software developers can use to make their applications easier to install on Compaq servers. SmartStart currently only eases the installation of applications contained on a Compaq CD-ROM.

Compaq's *Austin has plans to transform SmartStart into a generic installation engine.*

Insight Manager will gain more than router management. The company plans to add the ability to access Insight remotely — either through partnership or acquisition — by the end of the year, according to Gary Stimac, vice president of Compaq's systems division.

Leonard Gervlo, MIS director at Blessings Corp. in Newport News, Va., employs Insight Manager to view his network of over 200 users. He just bought two Cisco routers last week and is happy to hear he will be able to manage them with a Compaq product.

Compaq is also changing how its server configuration utility works. SmartStart, which configures an application with a click of a mouse, currently features about 10 applications.

Gene Austin, Compaq's vice president of marketing, said the company intends to transform SmartStart into a generic installation engine by offering the API. For users, this means that a plethora of software applications not currently on SmartStart CD-ROMs will be easily configurable on servers.

A company just cannot be in networking these days without a Web strategy. Besides angling to distribute applications this way, Compaq is readying a line of Web-centric servers. Web servers focused on firewalls, commerce and publishing will all come from Compaq in the near future, officials said. A server that includes a router and hub will be available by the end of the year, Stimac said.

Compaq hopes to provide software distribution over the Web "on a high-profile scale by the end of the year," according to Mark Specker, an analyst at Gartner Group, Inc. in Santa Clara, Calif. But the software strategy still needs some implementation work and legal review, according to Carl Chen, a Compaq product manager.

If it passes muster, the Web offering will be part of a complete service and support package, which will include a consulting arm by the end of the year, according to Austin. ■

NETWORK SERVICE & SUPPORT SURVEY

Paying the price for good network service and support

By Tim Greene

Vitel International, Inc. recently decided to drop its contract for Cisco Systems, Inc. to monitor and maintain the routers in its network around the clock.

Cisco was doing a good job, but Vitel decided the service was just too expensive, said Dan Gallegos, international network manager for the fax network company. Vitel now monitors the routers itself, relying on bridges to keep the network going during router failures until it can call Cisco in for assistance.

Vitel's decision reflects a conclusion many users are drawing: The cost of external support may be too high to justify, so they must sometimes settle for less than the ideal.

In fact, users' No. 1 gripe about external service and support is the cost, according to results of the 1996 Network Service and Support Survey sponsored by *Network World* and Dataquest's Worldwide IT Services Group (see graphic, page 1). Nearly a quarter of the 287 network administrators polled say prices are too high for the external help they get to keep their networks running.

The cost of service and support was also the top gripe in our 1995 survey.

While they are criticized for the size of their fees, service and support vendors fare well when it came to scoring the quality of services they offer. On a scale of 1 to 5, with five being the best, the quality of outside planning and design services scores highest with an average rating of 4.03. Quality of outside network administration rates lowest with an average of 3.64 — still not a failing grade (see Figure 1).

Other key survey results include:

- Firms professing to offer expertise in servicing multivendor nets should do a better job.
- A quarter of respondents look for better interoperability between gear from different vendors.
- Half of those who answered expect to increase their internal support staffs this year.

Hidden costs

But the premier complaint is the cost of external service and support.

"There is definitely sticker shock," said Arnie Tomaino, an analyst with Dataquest. But on careful review, the prices might not be as bad as they look, he said.

As vendors are sure to point out when pitching their services, users should compare the costs of doing the same job in-house — including training, hiring and downtime while new systems are phased in.

"Outsourcers will charge what people are willing to pay," said Erik Levitt, president and chief executive officer of Core Technology Services, Inc., a consultancy in New York that offers service and support and advises users whether to use external support.

But the good news, Levitt said, is that prices are likely to come down significantly within three to five years, when more users opt for external service and support, allowing economies of scale to kick in for vendors.

Rob Stevenson, vice president of marketing for Pacific Bell Network Integration — a newcomer to providing external network management and support — sees three things that will allow large service providers to bring prices down.

First, new technologies such as the Remote Monitoring specification will make it easier and less expensive for vendors to monitor gear at remote customer sites, Stevenson said. Second, the cost of equipment packages offered as part of network integration and monitoring services will come down.

And third, by identifying common service needs and building packages to address them, service providers can standardize their offerings and drop their own costs, he said.

Price vs. predictability

In the meantime, network managers have to use their imagination to get the help they need.

Morty Mandel, chief systems analyst for Bray Valve and Controls Co. in Houston, said his company has consciously chosen to have end users within the company deal with some network support issues themselves. Bray has trained one person in each of five departments to be the first responder to end-user pleas for help. "Then we only get called on major problems the departmental person can't handle," Mandel said.

Similarly, the IS staff teaches those first-responders to train the rest of their departments about software upgrades. That results in a cost, but not a line item in the budget, according to Keith Brumbaugh, technology solutions manager for Integrated Systems Solutions Corp., a network services provider owned by IBM. He said that is an attractive strategy to chief information officers who say, "I don't care that network servicing is getting done by engineers and scientists. It's getting done, and I'm still recording record profits."

Fix it fast

While keeping an eye on the bottom line, users also have to make sure they get quick service when something goes wrong, and that's not always easy. In fact, poor responsiveness on the part of vendors is the No. 2 complaint of survey respondents.

Sometimes the problem is simple geography. For example, Don Schurdevin, the network manager for IASD Health Services Corp. in Sioux City, Iowa, said his far-flung frame relay network is monitored by US WEST, Inc. down to the router, and when something goes wrong, US WEST is supposed to fix it.

"They may say they're looking into the problem, but depending on how many problems they have, it may take two or three hours to resolve, and that response time is not adequate in our minds," Schurdevin said. "It's a tough issue to deal with."

So Schurdevin's staff may step in to handle problems themselves if they are closer to the problem site. It's not perfect, but it addresses the issue.

IASD still finds the US WEST service necessary because it provides 24-hour monitoring and alarm response that IASD could not afford with its own staff, Schur-

Figure 1

SATISFACTION SCALE

Level of satisfaction with vendors' network service and support on a scale of 1 to 5, with 5 being very satisfied (mean scores below):

	LAN	WAN
Planning and design	4.03	3.79
Implementation	3.89	3.85
Management	3.86	3.65
Troubleshooting and maintenance	3.77	3.69
Administration	3.64	3.89

Methodology

The Network Service and Support Survey was based on a questionnaire developed jointly by Dataquest's Worldwide IT Services Group and *Network World*. In December, 300 telephone interviews were conducted by Dataquest's Primary Research Group in San Jose, Calif., and analyzed by Dataquest's Worldwide IT Services Group in Westborough, Mass.

The survey participants were selected at random from among *Network World's* U.S. readership. These readers represent a cross section of IS and networking professionals, senior business executives and department managers from every major industrial sector, who are responsible for making purchasing decisions regarding network products and services.

Dataquest's Worldwide IT Services Group will publish an in-depth analysis of the survey's findings in a series of User Wants & Needs studies on network integration and support services.

For more information about these research reports, call (508) 871-5555.

About Dataquest's Worldwide IT Services Group

Dataquest's Worldwide IT Services Group is one of four research divisions of Dataquest, Inc., a 25-year-old global market research and consulting company serving the high-technology and financial communities.

The company provides worldwide market coverage on the semiconductor, computer systems and peripherals, communications, document management, software and services sectors of the information technology industry.

Dataquest is a Gartner Group, Inc. company. Dataquest's Worldwide IT Services Group is the largest provider of market information and insight regarding the support services segment of the information technology industry. Its competitor and end-user research addresses network integration and support services, desktop and systems support, software services, systems integration, outsourcing and professional services issues.

The services group produces research for vendors and end users in the U.S., Europe, Latin America and the Pacific Rim.

For more information regarding the group's market research and consulting services, call (508) 871-5555 or fax at (508) 871-6262.

Figure 2: WHAT'S THE BIGGEST DAY-TO-DAY PROBLEM AREA YOU FACE RUNNING YOUR NET?

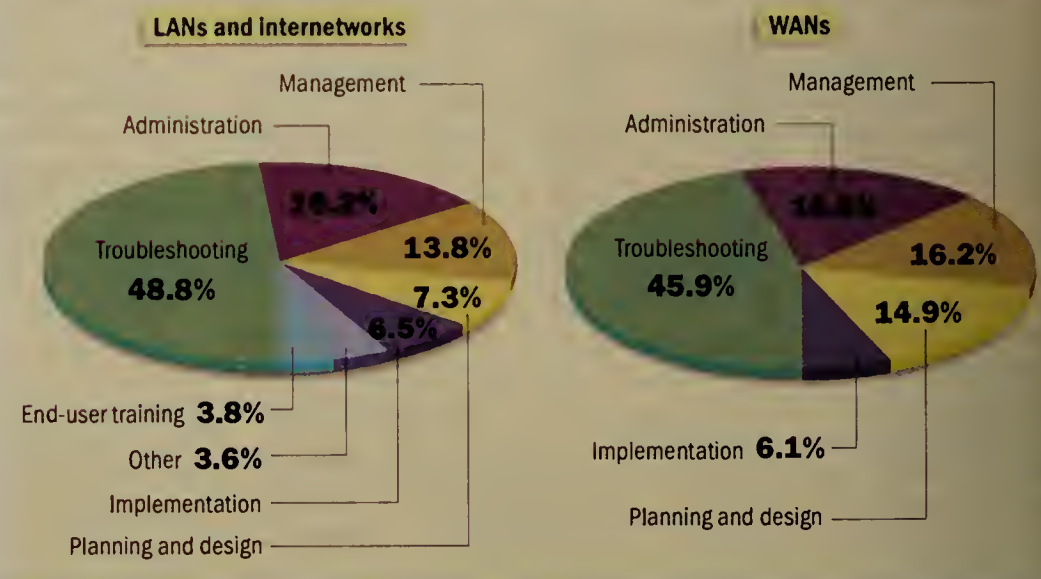
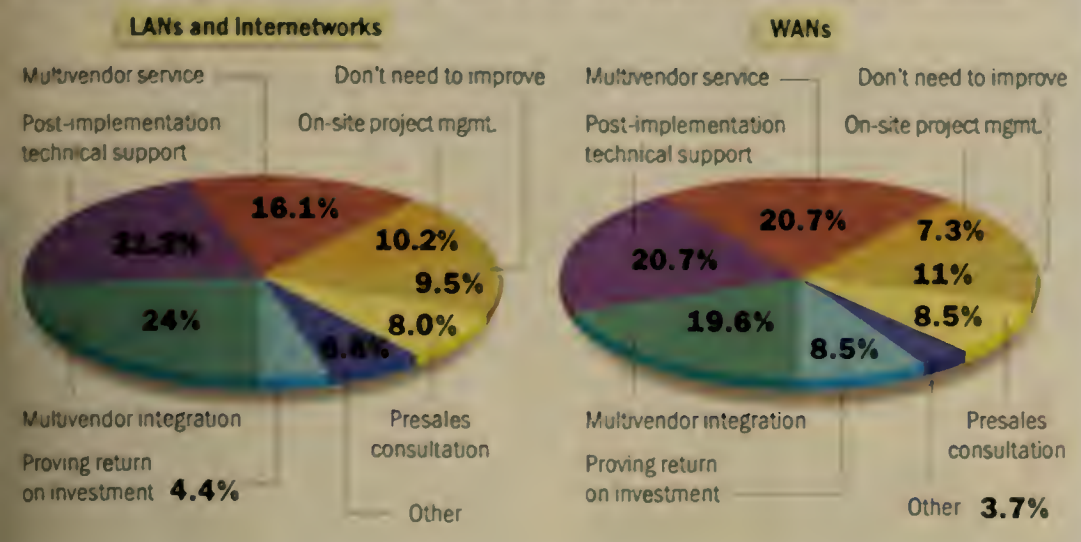


Figure 3: **NOT QUITE UP TO SNUFF**

Areas in which vendors need to improve their service and support (percentage of respondents):



levin said.

"You could rely on them exclusively, ut then you're not going to get the level f service and satisfaction you want and eed. You almost have to do some of your wn monitoring to keep everybody hon-st. And that's a hidden cost," he said.

Establishing close working relation-hips between internal and external sup-ort staff is also important in tackling net roblems fast and keeping downtime low.

The staffs learn to speak a shorthand ith each other and that can eliminate ours of redundant diagnostics if the out-ide consultant has faith that the inside taff has already done certain tests prop-rly, according to Hans Jacobsen, MIS irector at Nvidia Corp. in Sunnyvale, alif. In addition, users should seek response and resolution guarantees, Brumbaugh said. They can be measured, for example, by whether problems are resolved on the first help-desk call or how long it takes to resolve a problem on-site.

Schurdevin said the best he expects from service providers is a guaranteed response time; the potential cause of problems is so diverse that time to repair is unpredictable.

Multivendor help

Beyond those worries, our survey shows that net managers face other pressing day-to-day hassles. Chief among them is troubleshooting the network, with nearly half of the survey respondents citing that as the biggest time eater. To a lesser degree, they are occupied administering and managing their networks (see Figure 2, page 88).

In ranking how they would like outside service vendors to improve, about one in five respondents mention postimplementation technical support. But multivendor service and integration draws an even larger pool of criticism (see Figure 3). Overall, lack of multivendor expertise among service providers comes out as the No. 3 gripe.

Last year, our survey showed 41.7% of respondents were interested in a single vendor to provide service and support in multivendor environments, but more than half would not try one because they doubted they could get quality service.

That has become an issue for the Federal Deposit Insurance Corp. (FDIC), which has more than 350 LANs overseen by Michael Malarkey, senior systems analyst.

The FDIC outsources LAN administration, and under government rules, it must take the lowest bidder. Over the years, that has translated into periodically changing service vendors. "That can mean a brain drain," of people knowledgeable about the FDIC multivendor network, Malarkey said.

Brian Keller, head of a network quality assurance team at Chemical Bank Corp. in New York, agreed. "There are people who say they're experts but aren't. They say they know C++ well but are spending their time on the job learning it," he said.

The problem is tough to solve, according to Core Technology's Levitt, but large vendors are doing three things.

First, they offer account teams that together have the needed expertise. Second, behind the scenes from the user, they partner with another vendor whose staff does have the needed expertise. And third, vendors cross-train their staffs with those of other vendors so that staff from either vendor can handle a given user's problems.

The key for users: Get performance agreements with penalties. "If it costs them $2 million when your network is down for four hours, they're going to train their staff," Levitt said. ■

Using the Web as a support tool

If Morty Mandel wants software support, he doesn't necessarily need to get a vendor's technician on the phone.

"I'd just as soon use a Web page," said Mandel, chief systems analyst for Bray Valve and Controls Co. in Houston. "A lot of times, a vendor has done a good job with frequently asked questions [or FAQs], and you don't even need to talk to them or send them a message."

Mandel is just one of a legion of network mangers who are using the Web for network service and support. Keith Brumbaugh, technology solutions manager for Integrated Systems Solutions Corp. (ISSC), an outsourcer of LAN services, said Web pages are saving time for software upgrades.

ISSC uses Web pages to distribute software rather than having someone walk from desktop to desktop with a disk.

The end user performs the upgrade or on-site support technicians can download it in a fraction of the time it would take to install the software via a disk, he said.

NetManage, Inc. lets customers download patches for its software from the Web. Customers can also tap into technical support pages for most of the company's products and lists of FAQs. And if all else fails, they can leave an electronic memo describing the problem they're having and how the company can reach them. NetManage gets 200 questions per day in that manner.

There is a problem, though. It can take up to a week for the company to respond, according to Suzanne Calkins, NetManage's electronic support supervisor. The company is trying to get response time down to a day but currently is understaffed on the support side.

While the 1996 Network Service and Support Survey sponsored by *Network World* and Dataquest's Worldwide IT Services Group showed that less than 4% of respondents consider internal Web sites the most important thing they are doing to provide support (see graphic), observers said that number will no doubt increase this year.

The National Aeronautics and Space Administration's Jet Propulsion Laboratory (JPL) has thousands of Web sites, some of which are used as help desks and for software distribution.

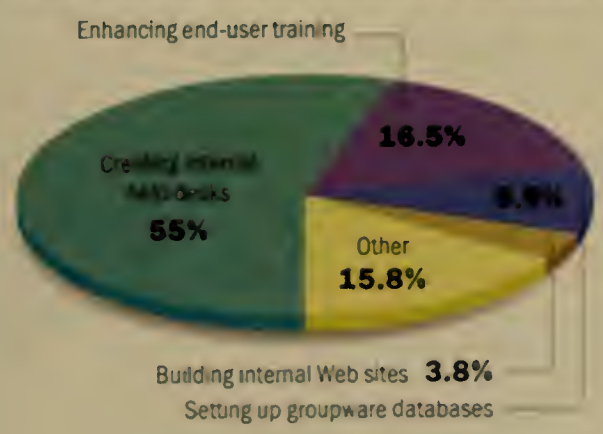
The lab offers its end users a great deal of freedom in choosing software for their workstations, with a list of about 4,000 authorized applications to choose from on one of the internal Web pages, said Alan Stepikoff, a program manager with JPL's institutional computing and information services group.

There is no way internal staff can support all that software, Stepikoff said, so JPL is building yet another Web page: a list of help desk phone numbers for the software JPL authorizes and hot links to vendor Web pages, if they have them.

—Tim Greene

HELPING THEMSELVES

The most important things network managers are doing to provide service and support (percentage of respondents):



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Warning: Computers may prove to be dangerous to your health

Well, Doctor, it all started when I plugged in my computer. I know that's not typically considered a dangerous thing to do, but let me explain....

I wanted to add some RAM to the machine, but the wretched design of the box and motherboard meant that to get at the memory, I had to remove hardware. I took out my monitor card, but that only exposed part of the RAM. So I had to take out the disk controller card. Even though I could now see all of the RAM chips, I found I still couldn't get the old chips out, as there wasn't quite enough room. So then I took out the serial/parallel I/O card, as well.

After I put the new RAM in, I had to put the adapter boards back in. A couple of jumpers had fallen off the I/O card, so I had to spend 20 minutes finding the right manual. Of course, the I/O card didn't have the vendor's name or even model number printed on it, so I had to look through every manual I could find. The instructions were, of course, in the first manual I looked at, but the diagrams were so badly rendered that I didn't recognize them at first pass.

As I put the last board in, I fumbled handling the retaining screw and needed to use tweezers to retrieve the screw from the dark recess that it instantly migrated to. But first, I had to — you guessed it — remove all of the boards, including those I didn't need to take out the first time around, to reach the trapped screw.

At this point, I said something that was vaguely along the lines of "damn," but just a little more colorful.

My temper was, not surprisingly, fraying, and in my haste to get the machine working, I must have left the tweezers *on the motherboard*. Thus, when I hit the big red switch, there was a pop, a hiss and a plume of acrid smoke.

In my haste to head off any further damage to my computer, I grabbed the power cord and tried to pull it out of the wall socket. It was at this point that the power socket came out of the wall and the socket came off the wires. The wires touched and there was another bang and a few sparks. The short circuit kicked out the fuse.

I grabbed the PC and attempted to drop-kick it through the window. That was, I think, when I broke my toe.

As we now had no power, the uninterruptable power supply (UPS) for the server on the other side of the room cut in and started beeping. Our dog, who I had brought into the office with me, had been happily sleeping under my desk up to the point when I switched on the computer. Having been unnerved by the bangs, the burning smell, the sparks and my cursing, the dog seemed to find the screaming from the UPS was more than she could stand.

She rushed out from under the desk with the Ethernet cable caught around her neck. This dragged the PC off the desk, which, because they were directly wired to each other, pulled the color laser printer to the floor. The cover on the laser printer opened and the toner cartridges fell out and kicked a cloud of blue, green and red toner into the office.

It was at this moment that my wife walked in and the dog, seeing her opportunity, rushed between my wife's legs in an attempt to get out the door. My wife lost her balance and landed face down in the toner.

At this point, I grabbed the PC and attempted to drop-kick it through the window. That was, I think, when I broke my toe.

Now, Doc, could you loosen the straps a little and slip me one of those little tablets? Thanks.

Quote of the Week — Lazlo's Chinese Relativity Axiom: No matter how great your triumphs or how tragic your defeats, approximately one billion Chinese couldn't care less.

Gibbs is looking for Web sites that want to get a lot of extra traffic for free. Drop him a note on the subject "Tell me more" at mgibbs@gibbs.com. Leave other thoughts at (800) 622-1108, Ext. 504.

Novell initiatives require skilled use of lipreading

Contrary to popular opinion, one can buy a drink in Utah. While relaxing one evening last week after a press briefing at Novell, Inc.'s BrainShare conference, I noticed CEO Bob Frankenberg, Executive VP Steve Markman and Chief Scientist Drew Major enter a state-sanctioned hotel watering hole. I'm an excellent lip-reader and could not resist eavesdropping.

Frankenberg: I'll have Scotch with one cube of ice, Glenlivet if you have it. Make that a double.

Markman: I'd like a glass of merlot. Drew?

Major: Hmm, usually I get a cranberry spritzer. What the heck; I'll have a Coke.

Frankenberg: So do you think those journalists bought our "Novell: The Internet Company" message? I got mixed vibes. Umm (sipping), this hits the spot.

Markman: They hammered us, said it was a stretch. Sure, our $100 million in Internet revenue was just 5% of gross. But that should qualify us. Heck, Netscape made a bundle on no profit. Can't blame us for chasing Internet mania.

I'm an excellent lip-reader and could not resist eavesdropping.

Frankenberg: We have to; Novell is a perfect match for the Internet, which is the key to most of our new growth. But it's tough managing our messages. Now marketing's miffed because we pushed the Internet image so hard. I must admit that "client/network computing" has a nice ring.

Major: At least we had Java licensed in time for the conference. I think I could have done a better job, though, explaining Java's tie-in with NetWare. Not to worry — most people don't understand Java anyway, so we've got time to create a better story.

Frankenberg: Java's important, Drew, but the press still doesn't buy our "general-purpose vs. special-purpose operating system" argument. I can't keep saying "We don't compete with NT" much longer. NT is taking market share, and it's not just for applications — people are using NT as net servers, too. (Sipping.) Sure wish Utah allowed more variety of single malts.

Markman: I know what you mean about selection; try to find a good burgundy.

Major: We're working on it — Java, that is. Java is steering everyone's application development. Unfortunately, we have no real sense how it will all play out.

Markman: If we're not careful, we'll get stuck in a corner over the application thing. Yes, Java is key to building intranet and Internet applications that use NetWare services. But we just took a lot of grief dumping WordPerfect and AppWare. When the press asked us, "What's your definition of an application?" we couldn't give a simple answer. We must give a better definition. Otherwise, people will think we're getting back into the application business and ignoring networking.

Frankenberg: Good point. Say, how about another round? Waiter! (Motioning.) I'm also worried that people don't understand our smart global network strategy, where the network itself becomes an intelligent resource of services. Our traditional customers build private networks. Things like the public network and NetWare Embedded Systems Technology are more invisible. Users might think we're not doing anything if we focus too much on behind-the-scenes infrastructure.

Markman: We should hire someone with a crystal ball. The haziest thing is knowing where revenue will grow. We sense the big Internet opportunity, but how does that translate into new income? How will people buy software in the future? What will they buy? How do you articulate what you don't know?

Frankenberg: The important thing is that we show a positive face. No one has all the answers. But there's nothing wrong figuring them out as we go.

Major: Sounds good to me. Now I'd like to get another Coke.

I sauntered over to the group and said, "Excuse me, gentlemen. I saw you come in a few minutes ago. Mind if I join you and ask a few follow-up questions from the press conference?"

Buerger is a networking industry consultant and writer in Atlanta. He can be reached at dave@buerger.com.

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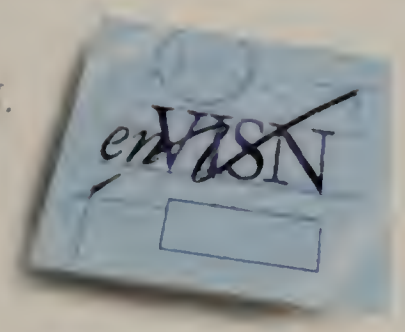

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